1. Ergänzung zu
1th. addition to
1° completamento per il

GRUNDIG

TV

Ⓓ Btx ★ 32700 #

SERVICE MANUAL

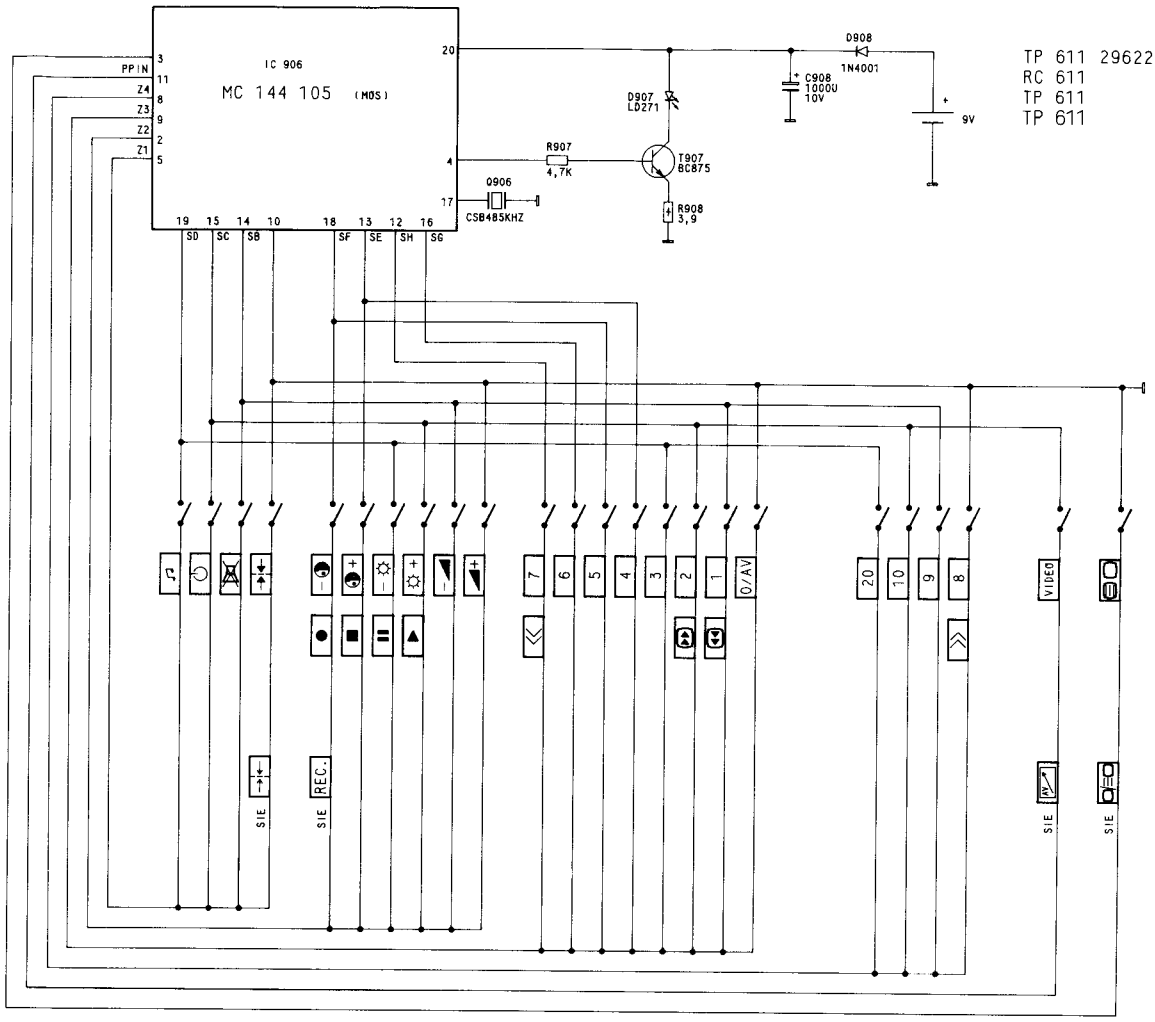
CUC 3490

Service Manual CUC 3490 Sach - Nr. 72010 - 001.30
Service manual CUC 3490 Order - No. 72010 - 001.30
Manuale di Servizio CUC 3490 N. di 72010 - 001.30

Ergänzungstypen, Gesamtschaltplan, ZF/SYNC., TP 611 text
Additional types, General circuit diagram, IF/SYNC., TP611 text
Tipi complementari, Schema elettrico, SYNCR./FI, TP 611 text

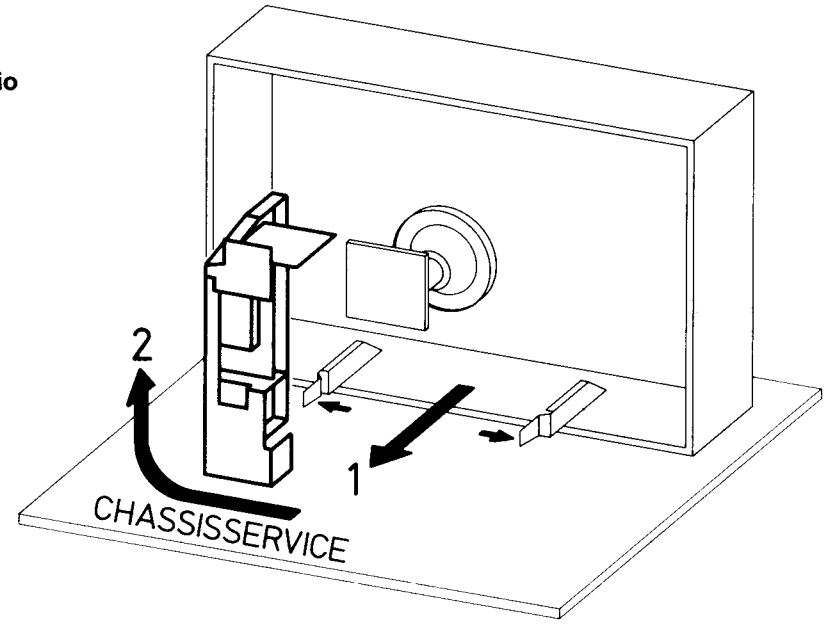
P 37 - 342/90 a **(9.25494 - 01)**
T 55 - 340/90 a **(9.25506 - 01)**

Service Manual 1. Ergänzung CUC 3490 Sach - Nr. 72010 - 001.31
Service manual 1th addition CUC 3490 Order - No. 72010 - 001.31
Manuale di Servizio 1°completamento per CUC 3490
N. di ordinaz. 72010 - 001. 31



TP 611 29622-051.01
RC 611 -051.02
TP 611 -051.08 SIEMENS
TP 611 -051.07 AKAI

Servicestellung
Service position
Posizione di servizio



GRUNDIG

TV

Ⓓ Btx ★ 32700 #

SERVICE MANUAL

CUC 3491

P 37 - 342 / 900 (9.25460 - 01)

Service Manual CUC 3491 Sach. - Nr. 72010 - 001.70
Service Manual CUC 3491 Order - No. 72010 - 001.70

(D)

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(GB)

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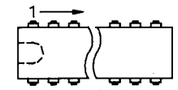
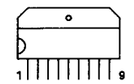
Symbole und ihre Bedeutung
Symbols and their meaning
Simboli e loro significati

P	PROGR.
P1	PROGR. TASTE PROGR. BUTTON TASTO PROGR. TOUCHE PROGR. PULS. PROGR.
M	SPEICHERTASTE MEMORY BUTTON TASTO DI MEMORIA TOUCHE MEMOIRE PULS. MEMORIA
NORM	NORMTASTE TV STANDARD SELECT. BUTTON COMMUT. DI NORMA TOUCHE DE NORME PULS. DE NORMA
▷▷+	FEINABST. + FINE TUNING + SINT. FINE + REGLAGE FIN + SINT. FINA +
-◁◁	FEINABST.- FINE TUNING - SINT. FINE - REGLAGE FIN - SINT. FINA -
I	SUCHLAUF BD I SELF-SEEK BAND I SINT. AUTOM. BANDA I RECHERCHE AUTOM. BANDE I SINT. AUTOM. BANDA-I
III	SUCHLAUF BANDWAHL III SELF-SEEK BAND III SINT. AUTOM. BANDA III RECHERCHE AUTOM. BANDE III SINT. AUTOM. BANDA-III
UHF	SUCHLAUF UHF SELF-SEEK UHF SINT. AUTOM. UHF RECHERCHE AUTOM. UHF SINT. AUTOM. UHF
	LAUTSTAERKE VOLUME VOLUME SONORE VOLUMEN
FT	FEINABST. FINE TUNING SINT. FINE REGLAGE FIN SINT. FINA
C	KANALWAHL CHANNEL SEL. SELEZ. CANALE SELECT. DE CANAUX SELECCION CANAL
	BALANCE BILANCIAM. BALANCE BALANCE
	SUCHLAUF SELF-SEEK SINT. AUTOM. RECHERCHE AUTOM. SINTONIA AUTOMATICA
U I/III	SCHALTSP. BANDWAHL BAND SEL. SWITCHING VOLTAGE TENS. DI COMMUT. SELEZ. BANDA TENS. DE COMMUT. SELECT. BANDE TENS. CONMUT. SELEC. BANDA
U VHF	SCHALTSP. VHF SWITCHING VOLT. VHF TENS. DI COMMUT. VHF TENS. DE COMMUT. VHF TENS. CONMUT. VHF
U UHF	SCHALTSP. UHF SWITCHING VOLT. UHF TENS. DI COMMUT. UHF TENS. DE COMMUT. UHF TENS. CONMUT. UHF
U AFC	SCHALTSP. AFC SWITCHING VOLT. AFC TENS. DI COMMUT. AFC TENS. DE COMMUT. AFC TENS. CONMUT. CAF
U AV	SCHALTSP. AV AV SWITCHING VOLT. TENS. DI COMMUT. AV TENS. DE COMMUT. AV TENS. CONMUT. AV
U NORM	SCHALTSP. NORM SWITCHING VOLT. STANDARD TENS. DI COMMUT. NORMA TENS. DE COMMUT. STANDARD TENS. CONMUT. NORMA
U COINC 50/60HZ	SCHALTSP. KOINZ. SWITCHING VOLT. COINC. TENS. DI COMMUT. COINC. TENS. DE COMMUT. COINC. TENS. CONMUT. COINCIDENCIA
U EURO-AV	SCHALTSP. EURO-AV SWITCHING VOLT. EURO-AV TENS. DI COMMUT. EURO-AV TENS. DE COMMUT. NORME FR TENS. CONMUT. EURO-AV
U VQ	SCHALTSP. VIDEO QUELLE SWITCHING VOLT. VIDEO SOURCE TENS. DI COMMUT. SORG. VIDEO TENS. DE COMMUT. SOURCE VIDEO TENS. CONMUT. VIDEO
U DATA	SCHALTSP. DATENBETR. SWITCHING VOLT. DATA MODE TENS. DI COMMUT. DATI TENS. DE COMMUT. FONCT. DONNEES TENS. CONMUT. DATOS
U 4,5MHZ	SCHALTSP. 4,5 MHZ SWITCHING VOLT. 4,5 MHZ TENS. DI COMMUT. 4,5 MHZ TENS. DE COMMUT. 4,5 MHZ TENS. CONMUT. 4,5MHZ
U T	REGELSP. VERZOEGERT DELAYED CONTR. VOLTAGE TENS. DI CONTR. RITARD. TENS. DE REGUL. RETARDEE TENS. REGUL. RETARDADA
U TUN.	ABSTIMMSP. TUNER TUNING VOLT. TUNER TENS. DI SINTONIA TUNER TENS. D'ACCORD TUNER TENS. SINTONIA AL TUNER
U AFC	REGELSP. AFC AFC CONTROL VOLT. TENS. DI CONTR. AFC TENS. DE REGUL. AFC TENS. REGUL. CAF
MUTE	STUMMSCHALTUNG MUTING SILENZIAMENTO SILENCIEUX MUTING
	TASTIMPULS GATING PULSE IMPULSO A CADENZA IMPULS. DE DECLENCHEMENT IMP. PUERTA
VERT.	VERT. TASTIMPULS VERT. GATING PULSE IMP. A CADENZA VERT. IMP. TRAME IMP. CUADRO
VERT.	VERT. PARABEL VERT. PARABOLA PARABOLA VERT. SIGNAL PARABOLIQUE SENAL PARABOL. VERT.
VERT.	VERT. SAEGEZAHN VERT. SAW TOOTH DENTE DI SEGA VERT. SIGNAL DENT DE SCIE DIENTE DE SIERRA VERT.
HOR.	HOR. ANSTEUERUNG HORIZ. DRIVE PILOTAGGIO ORIZZ. SYNCHR. LIGNES EXCITACION HORIZ.
REF.	REF. IMPULS REFERENCE PULSE IMP. DI RIFER. IMP. DE REFER. IMP. REFERENCIA HORIZ.
	SCHUTZSCHALTUNG CIRCUIT PROTECTION CIRCUITO DI PROTEZIONE CIRCUIT DE SECURITE CIRCUITO DE PROTECCION
	FARBTON TINT TINTA TEINTE TINTE
REF.	REF. LAUTSTAERKE VOLUME REF. VOLT. TENS. DI RIF. VOLUME TENS. DE REF. VOL. SONORE TENS. REF. VOLUMEN
	HELLIGKEIT BRIGHTNESS LUMINOSITA' LUMINOSITE BRILLO
	KONTRAST CONTRAST CONTRASTO CONTRASTE CONTRASTE
	FARBKONTRAST CONTRAST COLOUR CONTRASTO COLORE CONTRASTE COULEUR SATUR. COLOR
FBAS	FBAS-SIGNAL CCVS SIGNAL SEGNALE SVCC SIGNAL VIDEO COMPOSITE SENAL VIDEO COMPUESTA
SSC	SUPERSANDCASTLE
SB	STRAHLSTR. BEGR. BEAM CURRENT LIM. CORRENTE CATODICA MEDIA LIM. COUR. DE FAISCEAU CORRIENTE MEDIA DE HAZ
SSB	SPITZ. STRAHLSTR. BEGR. PEAK BEAM CURRENT LIMITING CORR. CATODICA DI PICCO LIM. DE FAISCEAU CRETE CORRIENTE PICO DE HAZ
R	ROT-SIGNAL RED SIGNAL SEGNALE ROSSO SIGNAL ROUGE SENAL ROJA
G	GRUEN-SIGNAL GREEN SIGNAL SEGNALE VERDE SIGNAL VERT SENAL VERDE
B	BLAU-SIGNAL BLUE SIGNAL SEGNALE BLU SIGNAL BLEU SENAL AZUL
Y	Y-SIGNAL SEGNALE Y SIGNAL Y SENAL Y
F	F-SIGNAL CHROMA SIGNAL SEGNALE F SIGNAL CHROMA SENAL CROMA
SW	SCHWARZWERT BLACK LEVEL LIVELLO DEL NERO NIVEAU DU NOIR NIVEL DE NEGRO
AUDIO	AUDIO-SIGNAL SEGNALE AUDIO SIGNAL AUDIO SENAL AUDIO
AUDIO-L	AUDIO SIGNAL LINKS AUDIO SIGNAL LEFT SEGNALE AUDIO SINISTRA SIGNAL AUDIO GAUCHE SENAL AUDIO IZQUIERDA
AUDIO-R	AUDIO SIGNAL RECHTS AUDIO SIGNAL RIGHT SEGNALE AUDIO DESTRA SIGNAL AUDIO DROIT SENAL AUDIO DERECHA
EURO-AV VIDEO	VIDEO SIGNAL EURO-AV SEGNALE VIDEO EURO-AV SIGNAL VIDEO NORME FR SENAL VIDEO EURO-AV
EURO-AV AUDIO-R	AUDIO SIGNAL EURO-AV RECHTS AUDIO SIGNAL EURO-AV RIGHT SEGNALE AUDIO EURO-AV DESTRA SIGNAL AUDIO NORME FR DROIT SENAL AUDIO DERECHA EURO-AV
EURO-AV AUDIO-L	AUDIO SIGNAL EURO-AV LINKS AUDIO SIGNAL EURO-AV LEFT SEGNALE VIDEO EURO-AV SINISTRA SIGNAL AUDIO NORME FR GAUCHE SENAL AUDIO IZQUIERDA EURO-AV
IR	IR-SIGNAL SEGNALE IR SIGNAL IR SENAL IR
U G1	SPG. GITTER 1 VOLTAGE GRID 1 TENS. GRIGLIA 1 TENS. GRILLE G1 TENS. REJILLAS G-1
U FOC.	FOKUSSP. FOCUSSING VOLTAGE TENS. DI FOCALIZZ. TENS. DE FOCALIS. TENS. FOCALIZACION
U H	HOCHSPANNUNG EHT VOLTAGE ALTA TENS. HAUTE TENSION MAT
U SG	SCHIRMGITTERSP. SCREEN-GRID VOLT. TENS. GRIGLIA SCHERMO TENS. GRILLE-ECRAN TENS. ACELERADORES
TE	TEXT ENABLE
SCL	I^2C-CLOCK I^2C-BUS
VCL	VCR-CLOCK
ICL	I-BUS-CLOCK
SDA	DATEN DATA DATI DONNEES DATA
ZF	ZF-SIGNAL IF SIGNAL SEGNALE FI SIGNAL FI SENAL DE FI
PP	PAL PRIORITAET PAL PRIORITY PRIORITA' PAL PRIORITE PAL PRIORIDAD PAL
F-DIR.	F-SIGNAL DIREKT F SIGNAL DIRECT SEGNALE F DIRETTO SIGNAL CHROMA DIRECT SENAL CROMA DIRECTA
F V	FV-SIGNAL FV SIGNAL SEGNALE FV SIGNAL FY SENAL FV
F U	FU-SIGNAL FU SIGNAL SEGNALE FU SIGNAL FX SENAL FU
F-VERZ	F-SIGNAL VERZOEGERT F SIGNAL DELAYED SEGNALE F RITARD. SIGNAL CHROMA RETARDE SENAL CROMA RETARDADA
DL	VERZOEGERUNGSLEITUNG DELAY LINE LINEA DI RITARDO LIGNE A RETARD LINEA DE RETARDO
U SCHUTZ	SCHALTSP./SCHUTZFUNKTION SWITCHING VOLT. /PROTECTIVE FUNC. TENS. DI COMMUT. /FUNZ.DI PROTEZ. TENS. DE COMMUT. / SECURITE TENS. CONMUT./PROTECCION
FBAS SYNC.	FBAS/SYNC.-SIGNAL CCVS/SYNC. SIGNAL SEGNALE SINCR. /VIDEO COL. COMP. SIGNAL SYNC./VIDEO COMPOSITE SENAL SINCR./VIDEO COMPUESTA
SYNC.	SYNC.-SIGNAL SYNC. SIGNAL SEGNALE SINCR. SIGNAL SYNC. SENAL DE SINCRONISMOS
U 50/60 HZ	SCHALTSP. 50/60HZ SWITCHING VOLT.50/60HZ TENS. DI COMMUT. 50/60HZ TENS. DE COMMUT. 50/60HZ TENS. CONMUT. 50/60HZ
U BTX	SCHALTSP. BTX SWITCHING VOLT. BTX (VIEWDATA) TENS. COMMUT. VIDEOTEL TENS. COMMUT. VIDEOTEXTE TENS. CONMUT. VIDEOTEXTO
SYNC. VT	SYNC. VT SYNC. VT (TELETEXT) SINCR. TELEVIDEO SYNC. TELETEXTE SINCR. TELETEXTO
SYNC. BTX	SYNC. BTX SYNC. BTX (VIEWDATA) SINCR. VIDEOTEL SYNC. VIDEOTEXTE SINCR. VIDEOTEXTO
U RESET	SCHALTSP. RESET SWITCHING VOLT. RESET TENS. COMMUT.,RESET TENS. CONMUT.RESET
U STAND BY	SCHALTSP. STAND BY SWITCHING VOLT. STAND BY TENS. COMMUT. STAND BY TENS. COMMUT.,VEILLE TENS. CONMUT. STAND BY
U HUB	SCHALTSP. HUB SWITCHING VOLT. DEVIATION TENS. COMMUT. DEVIAZIONE TENS. COMMUT.,DEVIATION TENS. CONMUT. DESVIACION
U DEEM	SCHALTSP. DEEM SWITCHING VOLT. DEEMPHASIS TENS. COMMUT. DEENFASI TENS. COMMUT.,DESACCENT. TENS. CONMUT. DEENFASIS
U CAM. AV	SCHALTSP. KAMERA WIEDERG. SWITCHING VOLT. CAMERA PLAYBACK TENS. COMMUT. RIPRODUZ. TELECAM. TENS. COMMUT. REPROD. CAMERA TENS. CONMUT. REPROD. CAMARA
U LED	SCHALTSP. LED LED SWITCHING VOLT. LED TENS. DI COMMUT. TENS. DE COMMUT. LED TENS. CONMUT. LED

Wichtige Schaltzeichen
Important circuit simbols
Segni circuitali importanti



IC'S VON UNTEN GESEHEN
IC'S SEEN FROM BOTTOM
IC'S VISTI DI SOTTO
IC'S VUS DU DESSOUS



TDA 4601

ZEILENBREITE
LINE WIDTH
LARGHEZZA DI RIGA
AMPLITUDE HORIZONTALE
AMPLITUD HORIZONTAL

OST / WEST AMPLITUDE
EAST / WEST AMPLITUDE
AMPIEZZA EST / OVEST
AMPLITUDE EST / OUEST
AMPLITUD E/O

HOR. LINEARITAET
HORIZ. LINEARITY
LINEAR. ORIZZ.
LINEAR. HORIZONT.
LINEAL. HORIZONTAL

BILDLAGE HOR.
HORIZ. PICTURE POSITION
POSIZIONE ORIZZ. D'IMMAGINE
CADRAGE HORIZONT.
CENTRADO HORIZONTAL

FOKUSREGLER
FOCUS CONTROL
REGOLAT. DI FOCALIZZ.
REGLAGE DE FOCALISATION
CONTROL DE FOCO

BILDLAGE VERT.
VERT. PICTURE POSITION
POSIZ. VERT. D'IMMAGINE
CADRAGE VERTICAL
CENTRADO VERTICAL

BILDAMPLITUDE
FIELD AMPLITUDE
AMPIEZZA D'IMMAGINE
AMPLITUDE VERTICALE
AMPLITUD VERTICAL

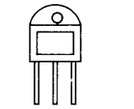
TRAPEZ
TRAPEZIUM
TRAPEZIO
TRAPEZE
TRAPECIO

HOR. FREQUENZ
HOR. FREQUENCY
FREQ. ORIZZ.
FREQ. HORIZ.
FRECUENCIA HORIZONTAL

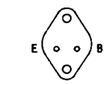
VERT. FREQUENZ
VERT. FREQUENCY
FREQ. VERT.
FRECUENCIA VERTICAL

VERT. LINEARITAET
VERT. LINEARITY
LINEAR. VERT.
LINEAR. VERT.
LINEALIDAD VERTICAL

OST/WEST SYMMETRIE
EAST/WEST SYMMETRY
SIMMETRIA EST/OVEST
SYMMETRIE EST/OUEST
SIMETRIA E/O

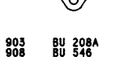


BF 199



78 L05 CP

BF 421 / BF 422
BC 637 / BF 423

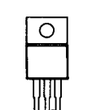


BC 548 / BC 558
BC 337/25
FN 2222
BC 338 / BC 324
BF 414
BC 308 / BC 248
BC 547

GF 759

BU 508A / BU 903
BU 508D / BU 908

BU 208A
BU 546



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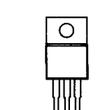
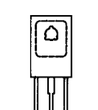
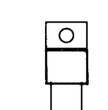
MC78 M05 CT
7812



BD 561G
BU 908
BU 903
S 868T
BUT 11A
BUT 56A

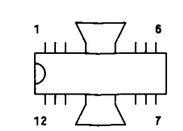


BD 561 G
BD 139



TDA 8170

TDA 2653A



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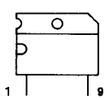

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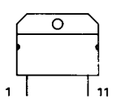
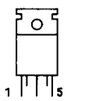
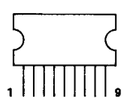


DL 60292

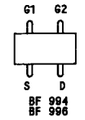


TDA 2040



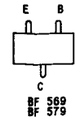
TDA 3654
TDA 3654A

SOT 143

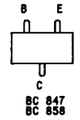


BF 994
BF 996

SOT 23



BF 569
BF 579



BC 847
BC 858

3/4W 0617 DIN
1/10W 0204 DIN
1/4W 0207 DIN
1/2W 0411 DIN
1W 0411 DIN
2W 0617 DIN
4W 0922 DIN

WIDERSTAND NICHT BRENNBAR
RESISTOR NOT FLAMMABLE
RESISTENZA NON INFIAMMABILE
RESISTANCE ININFLAMMABLE

DRAHTWIDERSTAND
WIRE RESISTOR
RESISTENZA A FILO
RESISTANCE BOBINEE

SICHERUNGSWIDERSTAND
SAFETY RESISTOR
RESISTENZA DI SICUREZZA
RESISTANCE DISJONCTABLE

KONDENSATOR
CAPACITOR
CONDENSATORE
CONDENSATEUR
250V~
400V~
630V~
1000V~

FOLIE
FOIL
A FOGLIA
FOLIO PLASTIQUE

KERAMIK
CERAMIC
CERAMICO
CERAMIQUE

ELKO
ELECTROLYTIC
ELETTROLITICO
ELECTROLYTIQUE

AHLSTR. BEGR.
CURRENT LIMITING
ICA DI PICCO
SCEAU CRETE
PICO DE HAZ

ISSO
E

AL
DE

IAL

MA

NERO
OIR
GRO

L
IO
O

L LINKS
L LEFT
IO SINISTRA
O GAUCHE
IZQUIERDA

L RECHTS
L RIGHT
IO DESTRA
O DROIT
DERECHA

L EURO-AV
EO EURO-AV
O NORME FR
EURO-AV

L EURO-AV RECHTS
L EURO-AV RIGHT
IO EURO-AV DESTRA
O NORME FR DROIT
DERECHA EURO-AV

L EURO-AV LINKS
L EURO-AV LEFT
EO EURO-AV SINISTRA
O NORME FR GAUCHE
IZQUIERDA EURO-AV

1
D 1
IA 1
E G1
LAS G-1

OLTAGE
CALIZZ.
CALIS.
IZACION

G

RSP.
VOLT.
IA SCHERMO
E-ECRAN
RADORES

SDA — DATEN / DATA / DATI / DONNEES / DATA

ZF — ZF-SIGNAL / IF SIGNAL / SEGNALE FI / SIGNAL FI / SENAL DE FI

PP — PAL PRIORITAET / PAL PRIORITY / PRIORITA' PAL / PRIORITE PAL / PRIORIDAD PAL

F-DIR. — F-SIGNAL DIREKT / F SIGNAL DIRECT / SEGNALE F DIRETTO / SIGNAL CHROMA DIRECT / SENAL CROMA DIRECTA

F_V — FV-SIGNAL / FV SIGNAL / SEGNALE FV / SIGNAL FY / SENAL FV

F_U — FU-SIGNAL / FU SIGNAL / SEGNALE FU / SIGNAL FX / SENAL FU

F-VERZ — F-SIGNAL VERZOEGERT / F SIGNAL DELAYED / SEGNALE F RITARD. / SIGNAL CHROMA RETARDE / SENAL CROMA RETARDADA

DL — VERZOEGERUNGSLEITUNG / DELAY LINE / LINEA DI RITARDO / LIGNE A RETARD / LINEA DE RETARDO

U SCHUTZ — SCHALTSP./SCHUTZFUNKTION / SWITCHING VOLT. /PROTECTIVE FUNC. / TENS. DI COMMUT. /FUNZ.DI PROTEZ. / TENS. DE COMMUT. / SECURITE / TENS. CONMUT./PROTECCION

FBAS SYNC. — FBAS/SYNC.-SIGNAL / CCVS/SYNC. SIGNAL / SEGNALE SINCR. /VIDEO COL. COMP. / SIGNAL SYNC./VIDEO COMPOSITE / SENAL SINCR./VIDEO COMPUESTA

SYNC. — SYNC.-SIGNAL / SYNC. SIGNAL / SEGNALE SINCR. / SIGNAL SYNC. / SENAL DE SINCRONISMOS

U 50/60 HZ — SCHALTSP. 50/60HZ / SWITCHING VOLT.50/60HZ / TENS. DI COMMUT. 50/60HZ / TENS. DE COMMUT. 50/60HZ / TENS. CONMUT. 50/60HZ

U BTX — SCHALTSP. BTX / SWITCHING VOLT. BTX (VIEWDATA) / TENS. COMMUT. VIDEOTEL / TENS. COMMUT. VIDEOTEXTE / TENS. CONMUT. VIDEOTEXTO

SYNC. VT — SYNC. VT / SYNC. VT (TELETEXT) / SINCR. TELEVIDEO / SYNC. TELETEXTE / SINCR. TELETEXTO

SYNC. BTX — SYNC. BTX / SYNC. BTX (VIEWDATA) / SINCR. VIDEOTEL / SYNC. VIDEOTEXTE / SINCR. VIDEOTEXTO

U RESET — SCHALTSP. RESET / SWITCHING VOLT. RESET / TENS. COMMUT.,RESET / TENS. CONMUT. RESET

U STAND BY — SCHALTSP. STAND BY / SWITCHING VOLT. STAND BY / TENS. COMMUT. STAND BY / TENS. COMMUT.,VEILLE / TENS. CONMUT. STAND BY

U HUB — SCHALTSP. HUB / SWITCHING VOLT. DEVIATION / TENS. COMMUT. DEVIAZIONE / TENS. COMMUT.,DEVIATION / TENS. CONMUT. DESVIACION

U DEEM — SCHALTSP. DEEM / SWITCHING VOLT. DEEMPHASIS / TENS. COMMUT. DEENFASI / TENS. COMMUT.,DESACCENT. / TENS. CONMUT. DEENFASIS

U CAM. AV — SCHALTSP. KAMERA WIEDERG. / SWITCHING VOLT. CAMERA PLAYBACK / TENS. COMMUT. RIPRODUZ. TELECAM. / TENS. COMMUT. REPROD. CAMERA / TENS. CONMUT. REPROD. CAMARA

U LED — SCHALTSP. LED / LED SWITCHING VOLT. / LED TENS. DI COMMUT. / TENS. DE COMMUT. LED / TENS. CONMUT. LED

ZEILENBREITE / LINE WIDTH / LARGHEZZA DI RIGA / AMPLITUDE HORIZONTALE / AMPLITUD HORIZONTAL

OST / WEST AMPLITUDE / EAST / WEST AMPLITUDE / AMPIEZZA EST / OVEST / AMPLITUDE EST / OUEST / AMPLITUD E/O

HOR. LINEARITAET / HORIZ. LINEARITY / LINEAR. ORIZZ. / LINEAR. HORIZONT. / LINEAL. HORIZONTAL

BILDLAGE HOR. / HORIZ. PICTURE POSITION / POSIZIONE ORIZZ. D'IMMAGINE / CADRAGE HORIZONT. / CENTRADO HORIZONTAL

FOKUSREGLER / FOCUS CONTROL / REGOLAT. DI FOCALIZZ. / REGLAGE DE FOCALISATION / CONTROL DE FOCO

BILDLAGE VERT. / VERT. PICTURE POSITION / POSIZ. VERT. D'IMMAGINE / CADRAGE VERTICAL / CENTRADO VERTICAL

BILDAMPLITUDE / FIELD AMPLITUDE / AMPIEZZA D'IMMAGINE / AMPLITUDE VERTICALE / AMPLITUD VERTICAL

TRAPEZ / TRAPEZIUM / TRAPEZIO / TRAPEZE / TRAPECIO

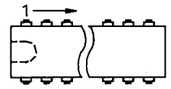
HOR. FREQUENZ / HOR. FREQUENCY / FREQ. ORIZZ. / FREQ. HORIZ. / FRECUENCIA HORIZONTAL

VERT. FREQUENZ / VERT. FREQUENCY / FREQ. VERT. / FRECUENCIA VERTICAL

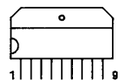
VERT. LINEARITAET / VERT. LINEARITY / LINEAR. VERT. / LINEAR. VERT. / LINEALIDAD VERTICAL

OST/WEST SYMMETRIE / EAST/WEST SYMMETRY / SIMMETRIA EST/OVEST / SYMMETRIE EST/OUEST / SIMETRIA E/O

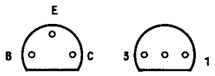
Wichtige Schaltzeichen
Important circuit simbols
Segni circuitali importanti



IC'S VON UNTEN GESEHEN
IC'S SEEN FROM BOTTOM
IC'S VISTI DI SOTTO
IC'S VUS DU DESSOUS



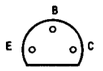
TDA 4601



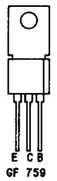
BF 199

78 L05 CP

BF 421 / BF 422
BC 637 / BF 423



BC 548 / BC 556
BC 337/25
PH 2222
BC 556 / BC 324
BF 414
BC 308 / BC 248
BC 547



GF 759

BU 508A / BU 903
BU 508D / BU 908

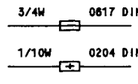
BU 208A
BU 546

TY 40164 / MC 7505
MC78 M05 CT
7812

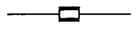
BD 561G
BU 908
BU 903
S 66BT
BUT 11A
BUT 56A

BD 561 G
BD 139

TDA 8170



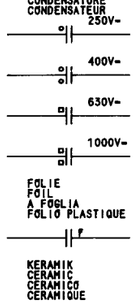
WIDERSTAND NICHT BRENNBAR
RESISTOR NOT FLAMMABLE
RESISTENZA NON INFIAMMABILE
RESISTANCE ININFLAMMABLE



DRAHTWIDERSTAND
WIRE RESISTOR
RESISTENZA A FILO
RESISTANCE BOBINEE

SICHERUNGSWIDERSTAND
SAFETY RESISTOR
RESISTENZA DI SICUREZZA
RESISTANCE DISJONCTABLE

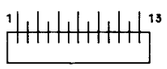
KONDENSATOR
CAPACITOR
CONDENSATORE
CONDENSATEUR



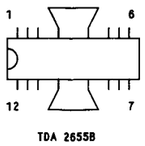
FOLIE
FOIL
A FOGLIA
FOLIO PLASTIQUE

KERAMIK
CERAMIC
CERAMICO
CERAMIQUE

ELKO
ELECTROLYTIC
ELETTROLITICO
ELECTROLYTIQUE

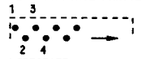


TDA 2653A

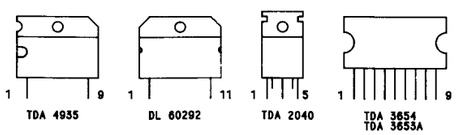


TDA 2655B

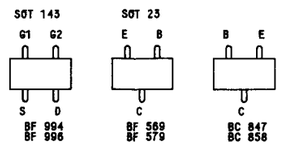
STECKERUNTERTEIL ZAEHLRICHTUNG
PLUG BOTTOM PART COUNTING DIRECTION
PARTE INFER. SPINA DIREZ. CONTEGGIO
SENS COMPTAGE PARTIE INFER. CONNECTEUR



LOETSEITE
SOLDER SIDE
LATO SALDATURE
COTE SOUDURE



TDA 4935 — DL 60292 — TDA 2040 — TDA 3654 / TDA 3653A



BF 994 / BF 996 — BF 569 / BF 579 — BC 847 / BC 858

ACHTUNG: (D) **BEI EINGRIFFEN INS GERÄT SIND DIE SICHERHEITSVORSCHRIFTEN NACH VDE701(REPARATURBEZOGEN) BZW.VDE0860/IEC65 (GERÄTEBEZOGEN) ZU BEACHTEN.**

⚠ IM REPARATURFALL DÜRFEN NUR ORIGINALBAUTEILE VERWENDET WERDEN !

ACHTUNG! (D) VORSCHRIFTEN BEIM UMGANG MIT MOS-BAUTEILEN BEACHTEN !

ATTENTION: (GB) **PLEASE OBSERVE THE APPLICABLE SAFETY REQUIREMENTS ACCORDING TO VDE 701 (CONCERNING REPAIRS) AND VDE 0860/IEC 65 (CONCERNING TYPE OF PRODUCT).**

⚠ ONLY USE COMPONENTS WITH THE SAME SPECIFICATION FOR REPLACEMENT !

ATTENTION! (GB) OBSERVE MOS COMPONENTS HANDLING INSTRUCTIONS WHEN SERVICING !

ATTENTION: (F) **PRIERE D'OBSERVER LES PRESCRIPTIONS DE SECURITE VDE 701 (CONCERNANT LES REPARATIONS) ET VDE 0860/IEC 65 (CONCERNANT LE TYPE DE PRODUIT).**

⚠ EN CAS DE REMPLACEMENT N´UTILISER QUE DES COMPOSANTS DES MEMES SPECIFICATIONS !

ATTENTION! (F) LORS DE LA MANIPULATION DES CIRCUITS MOS , RESPECTER LES PESCRIPTIONS MOS !

ATTENZIONE: (I) **OSSERVARNE LE CORRISPONDENTI PRESCRIZIONI DI SICUREZZA VDE 701 (CONCERNENTE SERVIZIO) E VDE 0860/IEC 65 (CONCERNENTE IL TIPO DI PRODOTTO).**

⚠ IN CASO DI SOSTITUZIONE IMPIEGARE SOLO COMPONENTI CON LE STESSE CARATTERISTICHE !

ATTENZIONE! (I) OSSERVARE LE RELATIVE PRESCRIZIONI DURANTE, LAVORI CON COMPONENTI MOS !

ATENCION: (E) **RECOMENDAMOS LAS NORMAS DE SEGURIDAD VDE U OTRAS NORMAS EQUIVALENTES. POR EJEMPLO : VDE 701 PARA REPARACIONES, VDE 0860/IEC 65 PARA APARATOS.**

⚠ EN CASO DE REPARACION UTILIZAR UNICAMENTE REPUESTOS ORIGINALES.

ATENCION! (E) DURANTE LA REPARACION OBSERVAR LAS NORMAS SOBRE COMPONENTES MOS !

EURO-AV-BUCHSE
EURO-AV SOCKET
PRESA EURO AV

29304-634.25/4B(01)

TUNER / TV-TUNER / TUNER-TV

ZF-SYNC. / IF SYNC. / SYNCR. FI

FARB-RGB / COULEURS-RGB / COLORE RVB

VIDEOTEXT / TELETEXT / TELEVIDEO

KASKADE
CASCADE
MOLTIPL. TENS.

NETZBAUSTEIN / MAINS BOARD / PIASTRA DI RETE

BILDROHRPLATTE / CRT BASE / PIASTRA CINESC.

7 U_{SG}
5 G BR-5
4 F BR-4
3 SSB BR-3
1 +C / BR-1

+B'
+11,5 V

SI 624
1,25 A

T2,5A

IC 501
IC365
IC820
IC881
IC811
IC663

TR526
TR651

S 601

CHASSIS

29701-046...

29304-070.54/.55
0BILDROHRPL. 90
29304-570.54/48(02)
KASKADE
CASCADE
UFOC.
+C
SSB
G
USG
STECKER BR CHASSIS
PLUG BR CHASSIS
SPINA BR DELL TELAIO
FARB/RGB-STECKKARTE
COLOUR / RGB
COLORE / RVB
R
G
B
+12V
SW

NETZTEILSATZ 29304-007.01
29304-684.01/48(04)
IC 9600
IC9602
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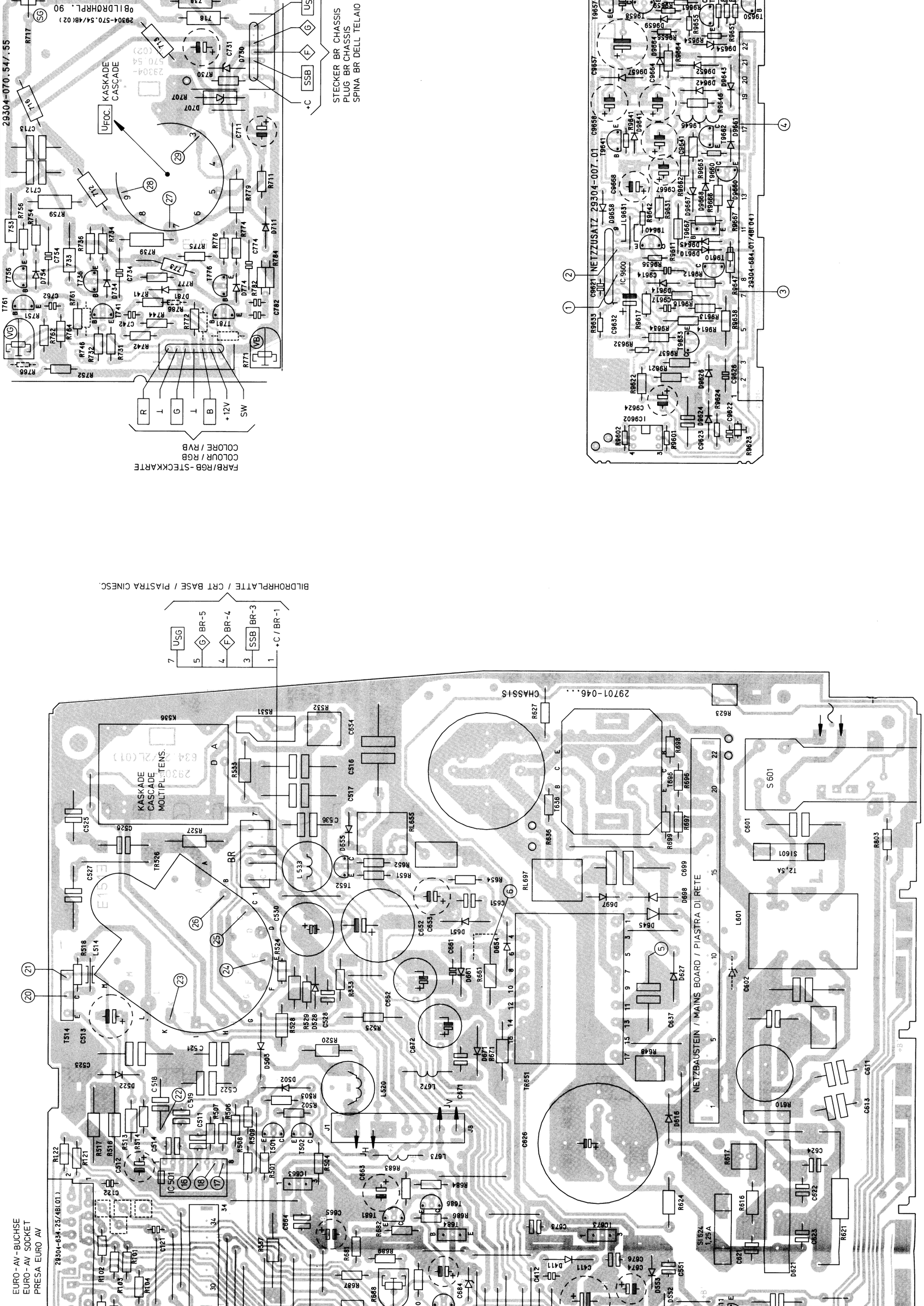
7


BILDROHRPLATTE / CRT BASE / PIASTRA CINESC.
7
5
4
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1
USG
G
F
SSB
+C
BR-5
BR-4
BR-3
BR-1
29701-046...
CHASSIS
KASKADE
CASCADE
MOLTIPLICATORE
NETZBAUSTEIN / MAINS BOARD / PIASTRA DI RETE
EURO-AV-BUCHSE
EURO-AV SOCKET
PRESA EURO AV
29304-634.25/48(01)
IC501
IC603
IC673
S601
S1624
1,25A
T2,5A
S1601
1
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11
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LED-PL. 29304-013.17
LED BOARD
PIASTRA LED
C.I. LED

HDN 113 G DP850

HDN 113 G DP800

UAA 2022
IC881

TDA4052
IC1211

ZC 84285 P (MOS)
IC811

MC 144111
IC 820
(MOS)

K.-TUNER 29504-101.01
CABLE TV TUNER
TUNER CAVO
TUNER TELEDISTRIBUTION

ZF/SYNC. 29504-162.65
-162.66 FR
IF SYNC.
SINCR. FI

EURO-AV-BUCHSE/EURO-AV SOCK
PRESA EURO AV/EMBASE PERI

VIDEOTEXT,3
TELETEXT
TELEVIDEO
ANTIOPE

KEYBOARD
C.I. DE COMMANDE

WISCHER
TEMP. CONTACT
CONTATTO TEMP.

29304-019.50

NETZBAUSTEIN 29305-007.02
MAINS MODULE
MOD.DI RETE
MOD. SECTEUR

TDA 4601 / IC 9600

29500-625.97

TR651 ⚠

NICHT NETZGETRENNTES SCHALTUNGSTEIL
CIRCUIT NOT MAINS - ISOLATED
CIRCUIT NON ISOLE DU SECTEUR
CIRCUITO NON SEPARATO DALLA RETE

PRIMAERMASSE ACHTUNG: NICHT NETZGETRENNT
PRIMARY CHASSIS, NOTE: NOT MAINS ISOLATED
MASSE PRIMAIRE ATTENTION: NON ISOLE DU SECTEUR
MASSA PRIMARIO, ATTENZ.: NON SEPAR. DALLA RETE

EURO-AV-BUCHSE/EURO-AV SOCKET
PRESA EURO AV/EMBASE PERI TV

ZF/SYNC. 29504-162.65
-162.66 FR
IF SYNC.
SINCR. FI

FARB/RGB 29504-165.01 MULTI
COLOUR/RGB
COLORE/RVB
DECODEUR/RVB

VIDEOTEXT/TELETEXT 29504-108.04
TELEVIDEO
SENDERKENNUNG/STATION IDENT. -108.51
IDENT. STAZIONE/IDENT.EMETTEUR
VT-STECKERPLATTE -108.92
TELETEXT SOCKET BOARD
PIASTRA A SPINA TELEVIDEO
PLAQUE ENFICHABLE ANTIOPE

OFFEN B.IT/FR
OPEN IN IT/FR VERS.
APERTO NELLA VERS. IT/FR
OUVERT POUR VERS. IT/FR

BILDROHRPL. 29304-070.59
CRT BASE
PIASTRA CINESC.
C.I. TUBE CATHOD.

TR526
29201-018.07

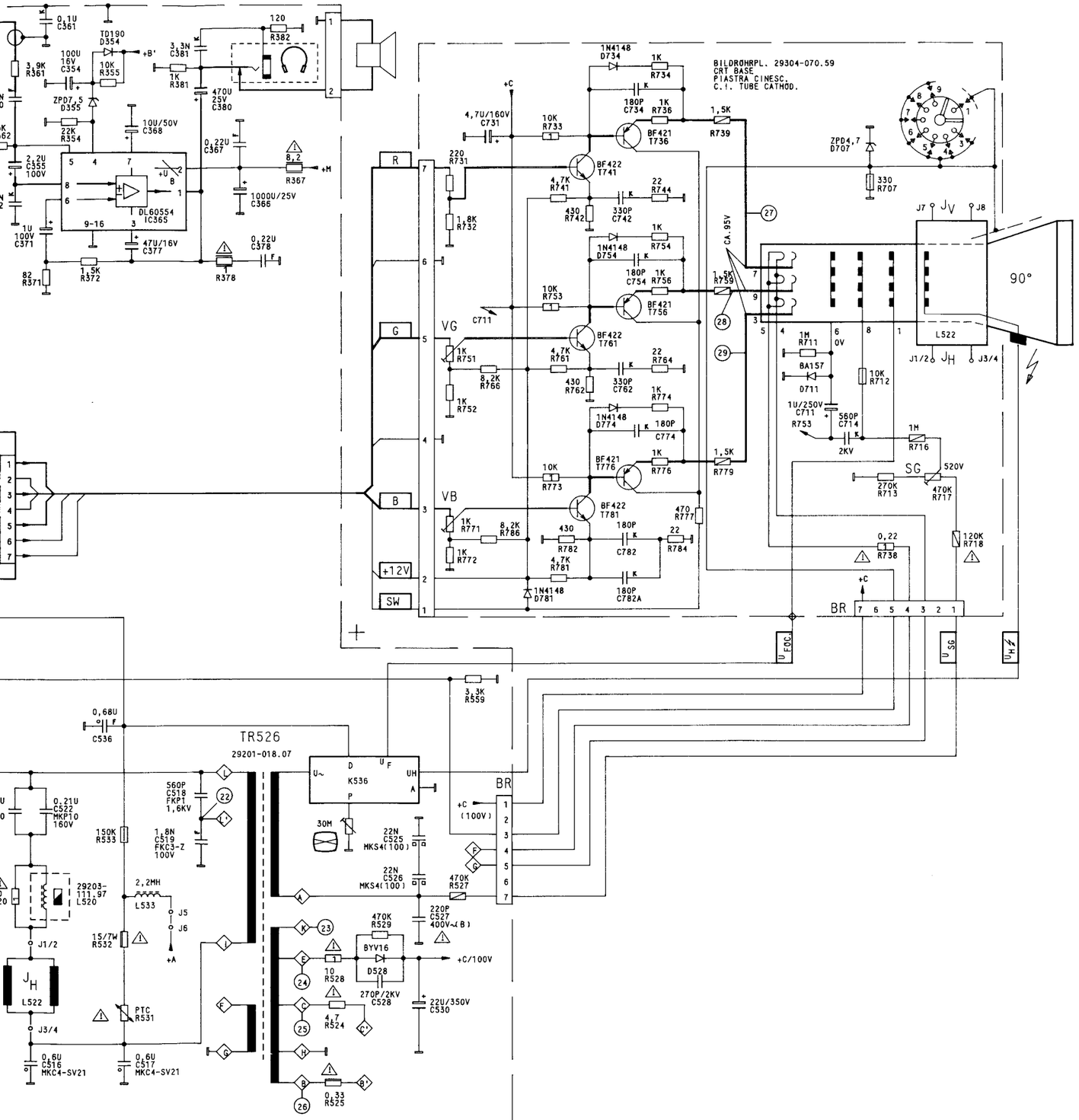
RL655
L655
ENTMAGNETISIERUNG
DEGAUSSING
SMAGNETIZZAZIONE
DEMAGNETISATION
TD190 D655

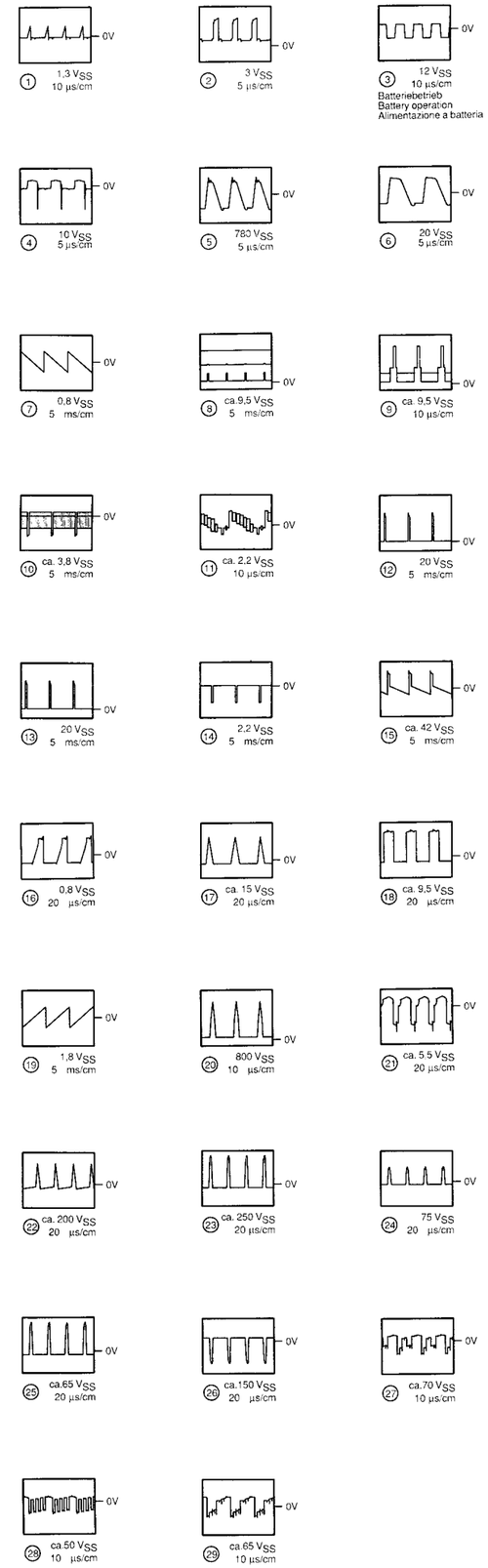
MC78M12 IC663
MC78M05CT IC673
BD204 T684
BC548 T685
BC548B T681
BC548 T682
BC548 T501
BC548 T502
BC548 T686
BA157 D503
1N4004 D502
TD8170 IC411
TDA 8140 IC501
BU508D T514
TD129 D522
TD190 D354
TD041 D422
ZPD7,5 D355
ZPD6,2 D687
ZPD5,6 D331
ZPD4,7 D707
1N4148 D734
1N4148 D754
1N4148 D774
1N4148 D781
1N4936 D411
1N4934 D421
MKS20
BYV16 D528
BA157 D711
DL60554 IC365

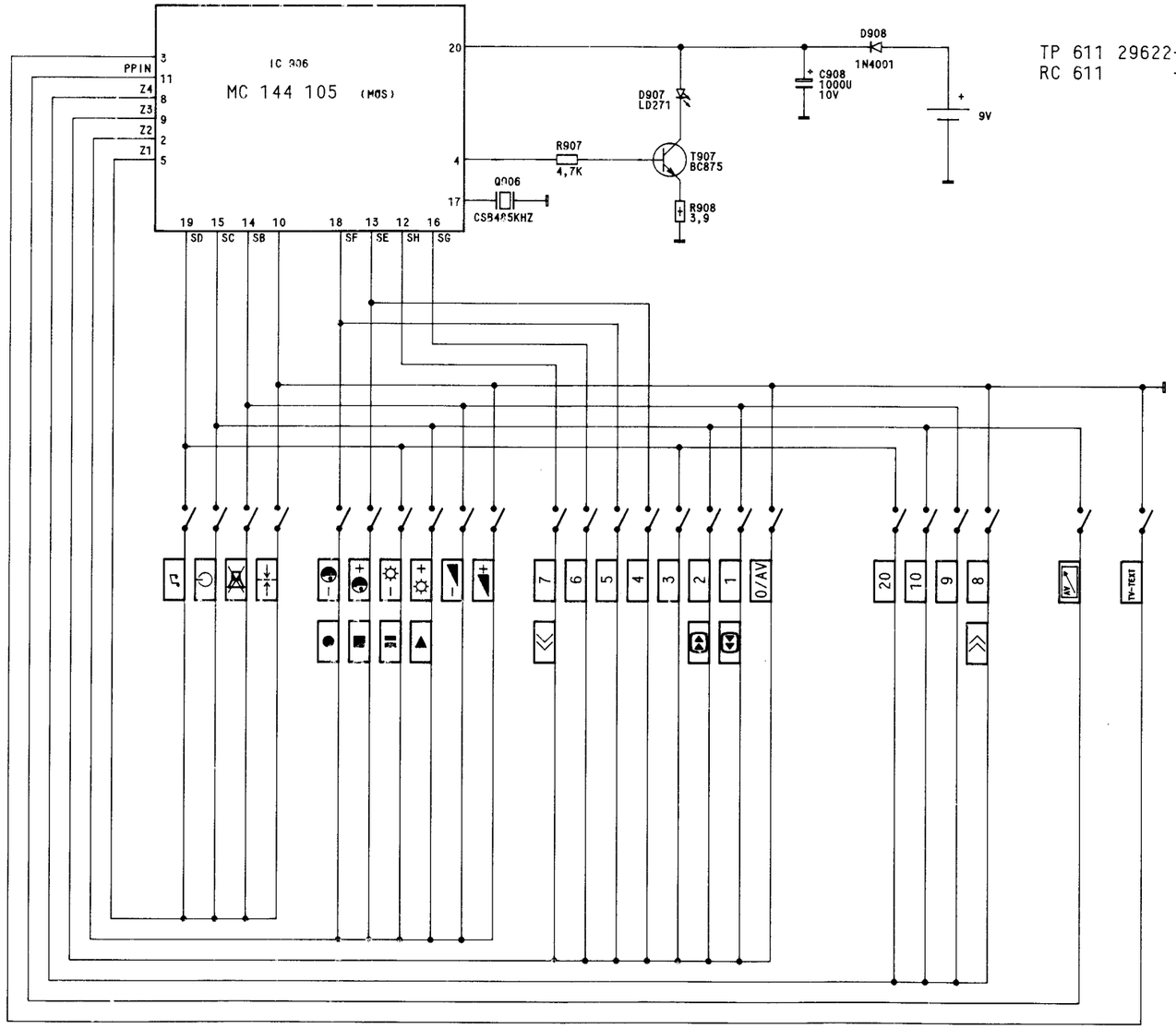
BF421 T736
BF422 T741
BF421 T756
BF422 T761
BF421 T776
BF422 T781

CUC 3491
CHASSIS 29701-046.19 (14")
TELAIO -046.80 (14") FR

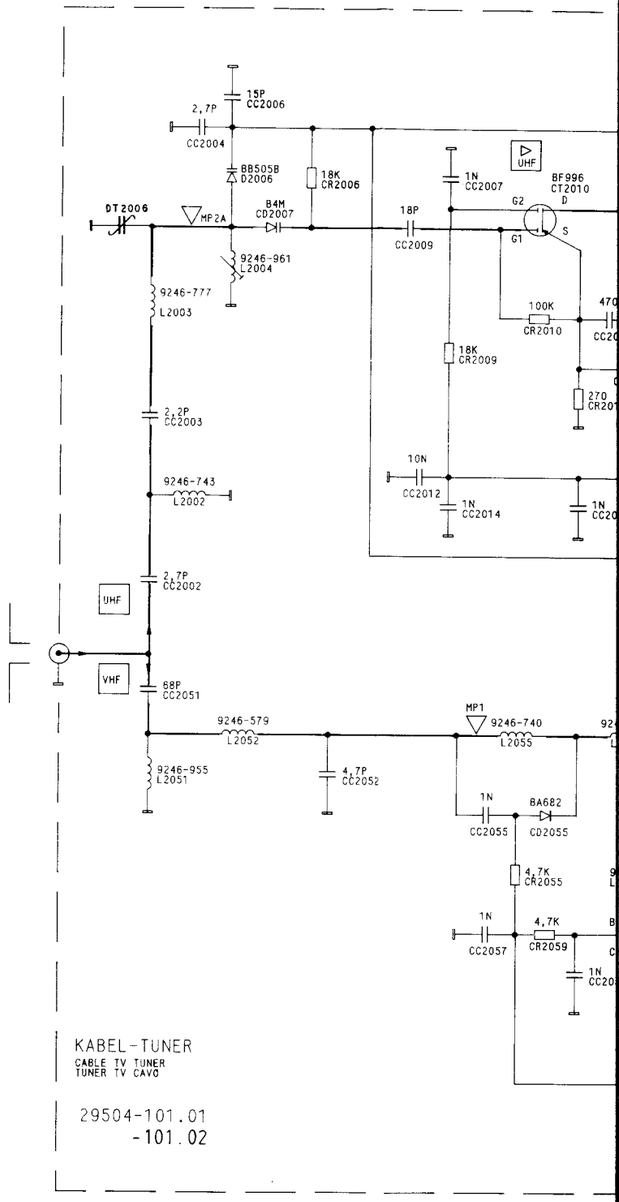
AENDERUNGEN VORBEHALTEN
SUBJECT TO ALTERATION
MODIFICATIONS RESERVEES
CON RISERVA DI MODIFICA


BILDROHRPL. 29304-070.59
CRT BASE
PIASTRA CINESC.
C.T. TUBE CATHOD.
TR526
29201-018.07
K536
DL60554
IC365
BF421 T736
BF422 T741
BF421 T756
BF422 T761
BF421 T776
BF422 T781
BA157 D711
BYV16 D528
L522
90°
VG
VB
SG
BR
+12V
SW
+C/100V
AENDERUNGEN VORBEHALTEN
SUBJECT TO ALTERATION
MODIFICATIONS RESERVEES
CON RISERVA DI MODIFICA

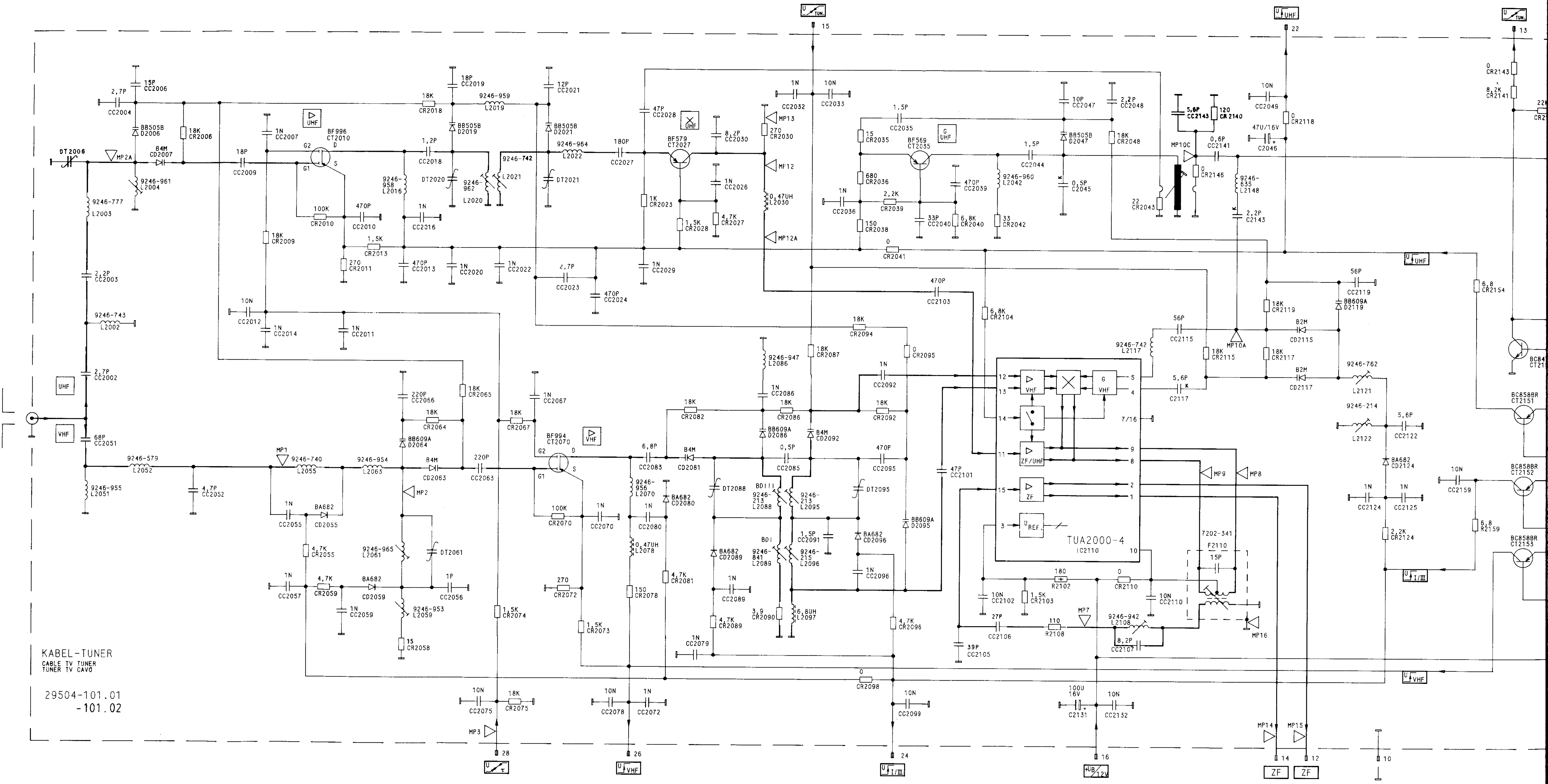

1 1,3 Vss 10 µs/cm
2 3 Vss 5 µs/cm
3 12 Vss 10 µs/cm
Batteriebetrieb
Battery operation
Alimentazione a batteria
4 10 Vss 5 µs/cm
5 780 Vss 5 µs/cm
6 20 Vss 5 µs/cm
7 0,8 Vss 5 ms/cm
9 ca.9,5 Vss 5 ms/cm
8 ca. 9,5 Vss 10 µs/cm
10 ca. 3,8 Vss 5 ms/cm
11 ca. 2,2 Vss 10 µs/cm
12 20 Vss 5 ms/cm
13 20 Vss 5 ms/cm
14 2,2 Vss 5 ms/cm
15 ca. 42 Vss 5 ms/cm
16 0,8 Vss 20 µs/cm
17 ca. 15 Vss 20 µs/cm
18 ca. 9,5 Vss 20 µs/cm
19 1,8 Vss 5 ms/cm
20 800 Vss 10 µs/cm
21 ca. 5,5 Vss 20 µs/cm
22 ca. 200 Vss 20 µs/cm
23 ca. 250 Vss 20 µs/cm
24 75 Vss 20 µs/cm
25 ca.65 Vss 20 µs/cm
26 ca.150 Vss 20 µs/cm
27 ca.70 Vss 10 µs/cm
28 ca.50 Vss 10 µs/cm
29 ca.65 Vss 10 µs/cm



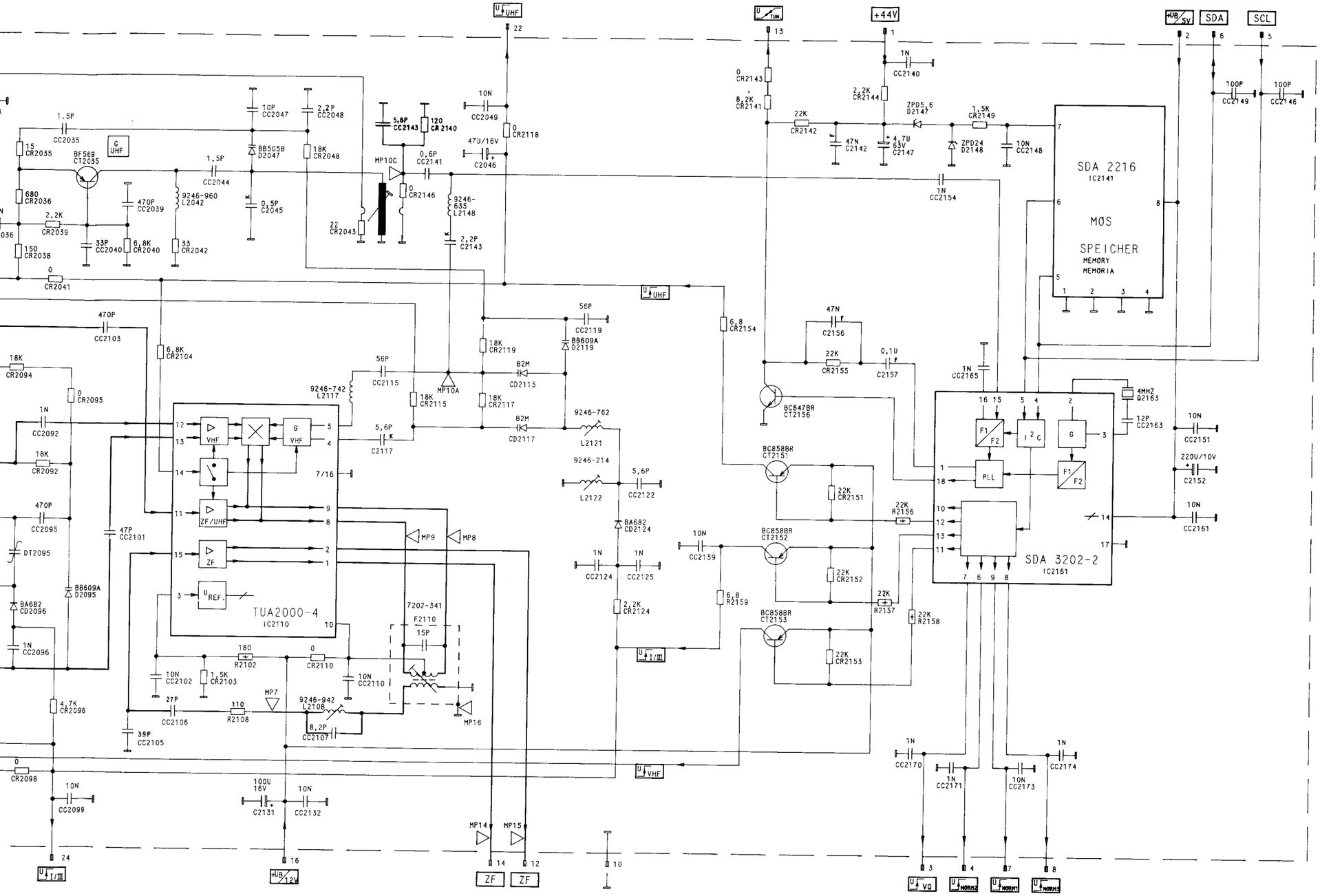
TP 611 29622-051.01
RC 611 -051.02



Kein Anpassungsabgleich bei Austausch der Steckkarte notwendig
When replacing the plug-in board, no alignment is necessary
Non è necessaria nessuna taratura di adattamento dopo la sostituzione di una scheda ad innesto


KABEL-TUNER
CABLE TV TUNER
TUNER TV CAVO
29504-101.01
-101.02
TUA2000-4
IC2110
BF996
CT2010
BF579
CT2027
BF569
CT2035
BF994
CT2070
BC858BR
CT2151
BC858BR
CT2152
BC858BR
CT2153
7202-341
F2110
UHF
VHF
ZF
ZF/UHF
MP1
MP2
MP2A
MP3
MP7
MP8
MP9
MP10A
MP10C
MP12
MP12A
MP13
MP14
MP15
MP16
15
22
13
28
26
24
16
14
12
10

Kein Anpassungsabgleich bei Austausch der Steckkarte notwendig
When replacing the plug-in board, no alignment is necessary
Non è necessaria nessuna taratura di adattamento dopo la sostituzione di una scheda ad innesto


U UHF
22
1,5P CC2035
15 CR2035
BF569 CT2035
G UHF
680 CR2036
2,2K CR2039
150 CR2038
0 CR2041
1,5P CC2044
9246-960 L2042
33P CC2040
6,8K CR2040
33 CR2042
470P CC2039
10P CC2047
BB505B D2047
0,5P C2045
2,2P CC2048
18K CR2048
5,6P CC2143
120 CR2140
MP10C
0,6P CC2141
0 CR2146
22 CR2043
10N CC2049
0 CR2118
47U/16V C2046
9246-635 L2148
2,2P C2143
U UHF
56P CC2119
BB609A D2119
18K CR2119
B2M CD2115
18K CR2117
B2M CD2117
MP10A
56P CC2115
18K CR2115
9246-742 L2117
5,6P C2117
9246-762 L2121
9246-214 L2122
5,6P CC2122
BA682 CD2124
6,8K CR2104
470P CC2103
18K CR2094
0 CR2095
1N CC2092
18K CR2092
470P CC2095
DT2095
BB609A D2095
BA682 CD2096
1N CC2096
4,7K CR2096
0 CR2098
10N CC2099
47P CC2101
12
13
14
11
15
3
VHF
G VHF
ZF/UHF
ZF
U REF.
TUA2000-4
IC2110
10
5
4
7/16
9
8
2
1
MP9
MP8
7202-341
F2110
15P
180 R2102
0 CR2110
10N CC2102
1,5K CR2103
10N CC2110
MP7
27P CC2106
110 R2108
9246-942 L2108
8,2P CC2107
39P CC2105
100U 16V C2131
10N CC2132
MP16
MP14
MP15
24
16
14
12
10
ZF
ZF
U I/III
+UB 12V
U VHF
U I/III
U TUN
13
+44V
1
1N CC2140
0 CR2143
8,2K CR2141
2,2K CR2144
22K CR2142
47N C2142
ZPD5,6 D2147
4,7U 63V C2147
1,5K CR2149
ZPD24 D2148
10N CC2148
1N CC2154
6,8 CR2154
47N C2156
22K CR2155
0,1U C2157
BC847BR CT2156
BC858BR CT2151
22K CR2151
22K R2156
10N CC2159
BC858BR CT2152
22K CR2152
6,8 R2159
2,2K CR2124
1N CC2124
1N CC2125
BC858BR CT2153
22K CR2153
22K R2157
22K R2158
1N CC2165
SDA 2216
IC2141
MOS
SPEICHER
MEMORY
MEMORIA
7
6
8
5
1
2
3
4
+UB 5V
SDA
SCL
2
6
5
100P CC2149
100P CC2146
4MHZ Q2163
12P CC2163
16
15
5
4
2
F1 F2
I²C
G
PLL
1
18
10
12
13
11
14
17
SDA 3202-2
IC2161
7
6
9
8
10N CC2151
220U/10V C2152
10N CC2161
1N CC2170
1N CC2171
1N CC2173
1N CC2174
3
4
7
8
U VQ
U NORM2
U NORM1
U NORM3

EURO-AV VIDEO
EURO-AV AUDIO
ZF
ZF
+UB/12V
+UB/12V
6/8/14
FBAS/SYNC
REF.
MC 14556
IC9240 (MOS)
DECODER
DECODER
TDA 4453
IC2220
TDA 2579
IC 9270
TDA 819
IC2230
SFE5,5MC F2213
07202-421 F2214
07202-604 F2215
FZ216 19202-566
07202-632 F2260
07202-669 F2275
07202-630 F2250
07202-381 F2206
07202-381 F2208
07202-650 F2211
F2253 07202-379
07207-631 F2258
ØFW G3950 F2220
BF414 T2201
BF414 T2215
BC558 T2215
BC558 T2232
BC548 T2230
BC548 T2268
BC548 T2278
BC548 T9259
BC548 T9260
BC558 T9262
BC558 T9258
BA282 D2215
BA282 D2214
BB409 D2216
6,2V D2217
TD129 D2242
BAT42 D2243
TD129 D9201
TD129 D9204
TD129 D9203
TD129 D9202
TD129 D9206
TD129 D9208
TD129 D9207
TD129 D9209
TD129 D9211
TD129 D9212
TD129 D9216
TD129 D9213
TD129 D9214
TD129 D9218
TD129 D9217
TD129 D9248
TD129 D9249
TD129 D9253
TD041 D9276
TD041 D9281
TD482 D9273
TD482 D9274
TD482 D9279
B4G D2253
10V D2245
BB329 D2207
BB329 D2209
BB329 D2212
BB329 D2206
BB329 D2208
BB329 D2211
BB409 D2266
L2201 4,7K R2202
L2245 15UH
L2246 15UH
L2248 15UH
L2249 15UH
L2216 33UH
L9289 27UH
R2201 10K
R2203 680
R2206 100K
R2208 100K
R2211 100K
R2217 2,2K
R2234 10K
R2241 560
R2242 270
R2244 1K
R2248 47
R2251 1,5K
R2252 330P
R2253 100K
R2254 27
R2257 390
R2261 470
R2262 2,7K
R2267 6,8K
R2269 6,2K
R2272 220
R2277 220
R2278 10K
R2289 *
R2223 *
R2222 10K
R2213 560
R2212 1,5K
R2224 1K
R2226 82K
R2231 22K
R2232 470
R2233 4,7K
R2215 10K
R2216 3,3K
R2218 6,8K
R2219 4,7K
R2254 22K
R2256 100K
R2258 10K
R2262 2,7K
R2264 100K
R2266 100K
R2268 330
R2271 750
R9201 100K
R9202 0,1U
R9203 220K
R9205 470K
R9206 100K
R9207 33K
R9208 22K
R9211 33K
R9212 22K
R9213 33K
R9216 56K
R9217 47K
R9218 510K
R9221 33K
R9222 27K
R9223 220K
R9224 120K
R9226 1M
R9227 100K
R9228 4,7K
R9229 36K
R9241 470
R9242 100K
R9243 100K
R9246 100K
R9247 100K
R9248 100K
R9251 100K
R9252 100K
R9253 100K
R9254 22K
R9256 1,5K
R9258 47K
R9261 820
R9262 2,2K
R9264 820
R9266 820
R9271 39K
R9272 10K
R9273 39K
R9274 82K
R9276 33K
R9277 5,6K
R9278 1,2K
R9279 2,2K
R9280 15K
R9281 100
R9282 1M
R9283 22
R9284 *
R9285 1M
R9286 10K
C2201 1N
C2203 8,2P
C2206 8,2P
C2208 8,2P
C2209 0,1U
C2210 0,1U
C2211 68P
C2212 10P
C2213 68P
C2214 7-35P
C2215 47P
C2216 1N
C2217 1N
C2218 10U/50V
C2219 0,1U
C2221 27P
C2223 22U/25V
C2226 0,1U
C2227 0,1U
C2228 22U/25V
C2230 4,7U/63V
C2231 *
C2232 4,7U/63V
C2233 4,7U/63V
C2234 4,7U/63V
C2237 470U/16
C2243 10U/50V
C2244 0,1U
C2246 10U/50V
C2247 10U/50V
C2248 100U/50V
C2249 10U/50V
C2251 4,7N
C2252 330P
C2253 10P
C2254 68P
C2257 4,7N
C2258 4,7N
C2261 1N
C2262 8,2P
C2263 1N
C2268 18P
C2271 2,2N
C2272 220
C2273 10U 50V
C2276 0,1U
C2278 0,15U
C2279 10U 50V
C2284 47N
C2286 0,15U
C2289 100U/25V
C9201 0,1U
C9203 33K
C9209 33K
C9211 47K
C9213 33K
C9217 36K
C9218 4,7K
C9222 27K
C9224 120K
C9227 100K
C9229 36K
C9241 470
C9242 100K
C9243 100K
C9246 100K
C9247 100K
C9248 100K
C9249 100K
C9251 100K
C9252 100K
C9253 100K
C9254 100K
C9258 47K
C9261 820
C9262 2,2K
C9264 820
C9266 820
C9271 2,2N
C9272 0,1U
C9273 10U 50V
C9276 0,1U
C9278 0,15U
C9279 10U 50V
C9280 15K
C9281 0,22U
C9282 22U/25V
C9283 2,2U/100V
C9284 47N
C9286 0,15U
C9288 4,7N
C9289 100U/25V
C9294 0,1U
F2216 19202-566
F2275 07202-669
+1
+2
+3
+4
+5
+6
+7
+8
+9
+UB
+UB
+UB

ZF-VERSTAERKER 29504-162.65 -162.66FR

IF AMPLIFIER
AMPLI FI
AMPLIFICATORE FI

TDA 8196 IC2230

TEA 2014 IC2275

*	IC2215	D2232	D2233	D2234	R2223	R9284	R2289	C2231
-162.65	U4480	TD129	TD129	ZPD5,6	5,1K	5,6K	4,7K	10N
-162.66	U4480-2	——	——	——	——	4,7K	1 K	47N

SENDERKENNUNG 29504-108.51

STATION IDENTIFICATION
IDENTIFICATEUR EMETTEUR
IDENTIFICATORE STAZIONE

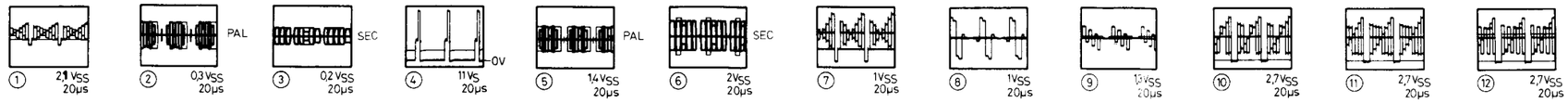
ZC84284 WW. ZC84286 MOT. IC 2810 (MOS)

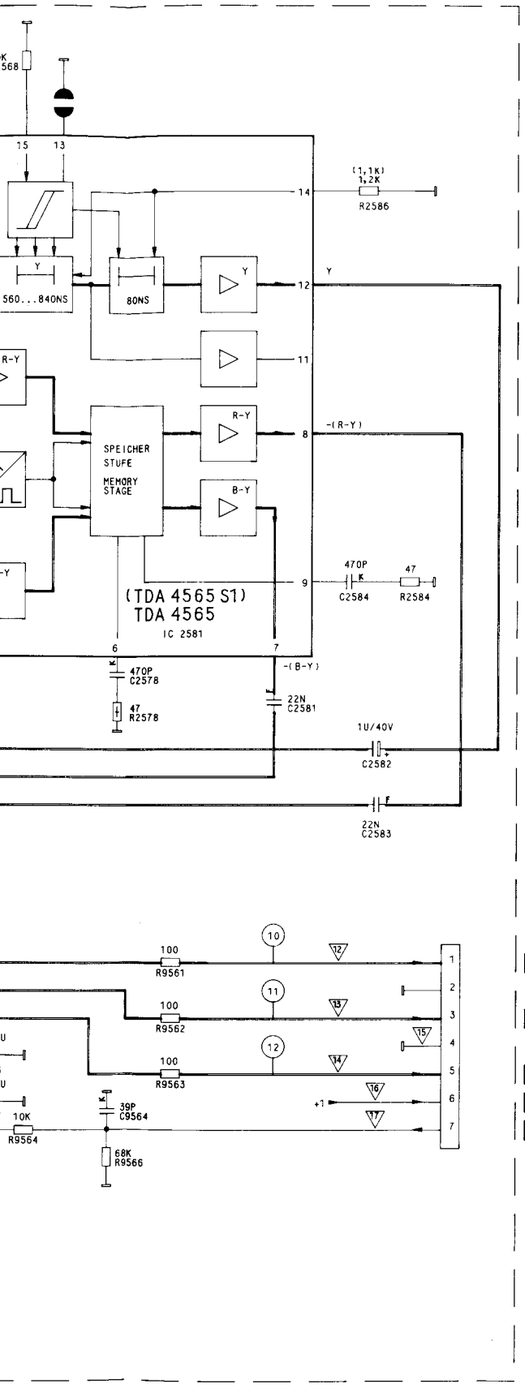
SDA 2526 IC 2820 1/2/3/4

TMS3743 ANL IC 2840 (MOS)

FARB / RGB MULTI 29504-165.01 ZEILENIDENTIFIKATION / LINE IDENT. / IDENT. DI RIGA
COLOUR / RGB -165.02 BILDIDENTIFIKATION / PICTURE IDENT. / IDENT. DI QUADRO
COLORE / RVB -165.03
-185.01

TDA 4555 IC 2555
TDA 4565 (TDA 4565 S1) IC 2581
TDA 3505 IC 9531


1 2,1 VSS 20µs
2 0,3 VSS 20µs PAL
3 0,2 VSS 20µs SEC
4 11 VS 0V
5 1,4 VSS 20µs PAL
6 2 VSS 20µs SEC
7 1 VSS 20µs
8 1 VSS 20µs
9 1 VSS 20µs
10 2,7 VSS 20µs
11 2,7 VSS 20µs
12 2,7 VSS 20µs



1. **Weißabgleich**
   - FuBK-Testbild einspeisen.
   - ◑ min., ☼ nom, ◑ max. einstellen.
   - Regler VG und VB (Bildrohrplatte) so einstellen, daß keine Verfärbungen in den Grauwerten sichtbar sind.

2. **Sperrpunktabgleich**
   Eine manuelle Einstellung ist nicht möglich, da die Steckkarte eine automatische Dunkelstromregelung besitzt. Kontrolle des Sperrpunkts (Oszilloskop erforderlich).
   - FuBK-Testbild einspeisen.
   - ◑ min., ☼ nom., ◑ min., einstellen.
   - Tastkopf an den Kollektoren der Transistoren T 736, T 756, T 776 anhängen (Bildrohrplatte). Die Schwarzwerte der drei Kathodensignale liegen bei ca. 140-150V.

3. **Einstellungen im Farbkanal**
   - PAL-Testbild einspeisen.
   - FK nom., H nom. K max. einstellen.
   - IC-Pin 28 vom TDA 4555 mit +12V verbinden.
   - IC-Pin 17 vom TDA 4555 mit Masse verbinden.
   - Mit Trimmer C9516 die durchlaufenden Farbbalken zum Stehen bringen.
   - Kurzschlußbrücken entfernen.
   - Tastkopf an MP 12, mit Regler BP und Spule LZ die Doppelbilder des B-Signals zur Deckung bringen.
   - NTSC-Testbild 3.5 MHz einspeisen.
   - IC-Pin 26 vom TDA 4555 mit +12V verbinden.
   - IC-Pin 17 vom TDA 4555 mit Masse verbinden.
   - Mit Trimmer C9514 die durchlaufenden Farbbalken zum Stehen bringen.
   - Kurzschlußbrücken entfernen.
   - SECAM-Testbild einspeisen.
   - Tastkopf an Pin 1 vom TDA 4555 anschließen, mit Spule DR Nullinie des (R-Y)-Signals auf Zeilenniveau bringen.
   - Tastkopf an Pin 3 vom TDA 4555 anschließen, mit Spule DB Nullinie des (B-Y)-Signals auf Zeilentastniveau bringen.
   - Spule F 2521 so einstellen, daß das (B-Y)-Signal keine Überschwinger hat.

4. **Strahlstrom**
   - Der Regler "SSB" wird werkseitig auf Mittelwert eingestellt.
   - Sollte bei vollem Kontrast und normal eingestellter Helligkeit in Spitzenweißfeldern des Sendertestbildes eine Defokussierung (starke Unschärfe bei weißen Schriftzeichen in Bildröhrenmitte) auftreten, so muß mit Regler "SSB" auf scharfe Schriftkonturen eingestellt werden (Reduzierung des Spitzenstrahlstromes).

1. **White level adjustment**
   - Display colour bar test pattern.
   - Set ◑ to min., ☼ to nom., ◑ to max.
   - Adjust presets VG and VB (CRT socket board) so that the picture does not show any colouration.

2. **Adjustment of cut-off point**
   Manual adjustment is not possible, as the circuit board employs an automatic dark current control circuit.
   To check cut-off point (oscilloscope required), proceed as follows:
   - Display colour bar test pattern.
   - Set ◑ to min., ☼ to nom., ◑ to min.
   - Connect test probe to collectors of T 736, T 756, T 776 (CRT socket board).
     The black leves of the three cathode signals should be 140-150V.

3. **Adjustments in chroma channel**
   - Display PAL test pattern.
   - Adjust colour level and brightness to nominal value, contrast to maximum.
   - Connect pin 28 of IC TDA 4555 to +12V supply.
   - Connect pin 17 to IC TDA 4555 to chassis.
   - Adjust trimmer C9516 for stationary pattern in colour bars.
   - Remove wire links.
   - Connect test probe to test point MP 12. LBring the double image produced by the B-signal to coincidence by adjusting the preset BP and the coil LZ.
   - Display 3.5 MHz NTSC test pattern.
   - Connect pin 26 of IC TDA 4555 to +12V supply.
   - Connect pin 17 of IC TDA 4555 to chassis.
   - Adjust trimmer C 9514 for stationary pattern in colour bars.
   - Remove wire links.
   - Display SECAM test pattern.
   - Connect test probe to pin 1 of IC TDA 4555.
   - Use coil DR to align zero level of the (R-Y) signal with the line black level.
   - Connect test probe to pin 3 of IC TDA 4555.
   - Use coil DB to align zero level of the (B-Y) signal with the line black level.
   - Adjust coil F2521 so that the (B-Y) signal is free of overshooting.

4. **Beam current**
   - During manufacture the control "SSB" is adjusted to middle value.
   - If during max. contrast and normal brightness adjustment the peak-white fields of the test picture should be defocused (in the middle of the screen white letters are very distorted) the contours of the letters must be adjusted using control "SSB" (reducing the peak beam current).

1. **Taratura del bianco**
   - Applicare un monoscopio FuBK.
   - Regolare ◑ al minimo, ☼ sul valore nominale e ◑ al massimo.
   - Con i regolatori VG e VB (piastra cinescopio) eliminare eventuali macchie di colore.

2. **Taratura del punto di blocco**
   Una regolazione manuale non è possibile, poiché questa scheda incorpora una regolazione automatica della corrente d'interdizione.
   Controllo del punto di blocco (é necessario un oscilloscopio):
   - Applicare un monoscopio FuBK.
   - Regolare ◑ al minimo, ☼ sul valore nominale e ◑ al minimo.
   - Collegare la sonda ai collettori dei transistori T 736, T 756, T 776 (piastra cinescopio).
     Valore nero dei tre segnali catodici ca. 140-150V.

3. **Regolazione del canale colore**
   - Applicare un monoscopio PAL.
   - Regolare FK e H sul valore nominale, K al massimo.
   - Sull'integrato TDA 4555 collegare pin 28 a +12V.
   - Sull'integrato TDA 4555 collegare pin 17 a massa.
   - Con C9516 fermare le barre colorate scorrevoli.
   - Togliere i cortocircuiti.
   - Collegare la sonda a MP 12, con il regolatore BP e la bobina LZ portare a copertura le immagini doppie del segnale B.
   - Applicare un monoscopio NTSC 3,5 MHz.
   - Sull'integrato TDA 4555 collegare pin 26 a +12V.
   - Sull'integrato TDA 4555 collegare pin 17 a massa.
   - Con C9514 fermare le barre colorate scorrevoli.
   - Togliere i cortocircuiti.
   - Applicare un monoscopio SECAM.
   - Collegare la sonda al pin 1 dell'integrato TDA 4555, con la bobina DR portare la linea zero del segnale (R-Y) sul livello della frequenza di riga.
   - Collegare la sonda al pin 3 dell'integrato TDA 4555, con la bobina DB portare la linea zero del segnale (B-Y) sul livello della frequenza di riga.
   - La bobina F2581 applicarla cosi in modo che il segnale (B-Y) sia chiaro.

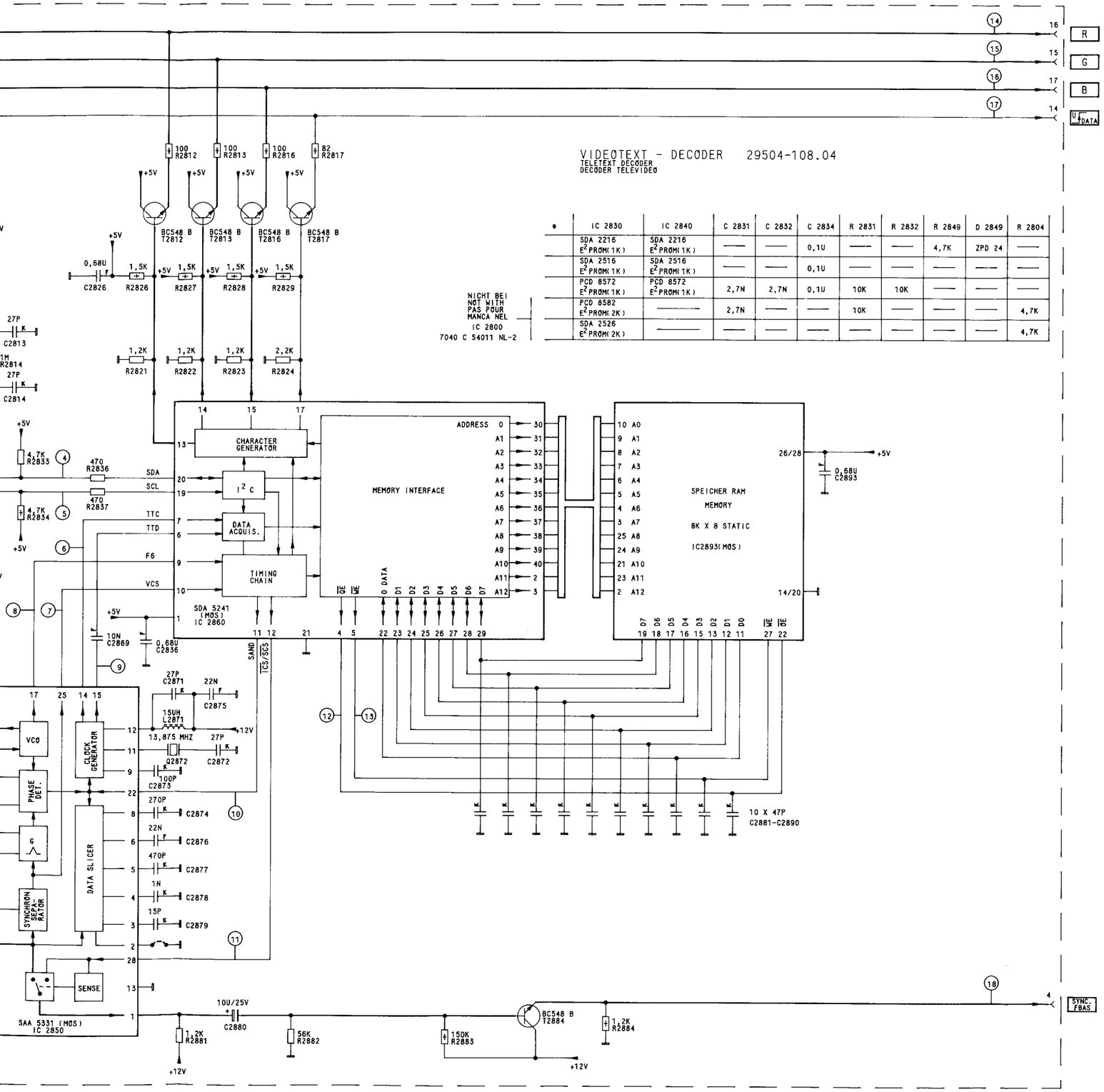
4. **Corrente catodica**
   - Il regolatore "SSB" viene regolato già in fabbrica su valori medi.
   - Se con il contrasto al massimo ed una regolazione normale della luminosità dovesse presentarsi una sfocalizzazione nei campi ultrabianchi del cinescopio (le lettere bianche al centro del cinescopio risultano molto sfuocate), agire sul regolatore "SSB" per mettere a fuoco i contorni delle lettere (riducendo la corrente catodica di picco).

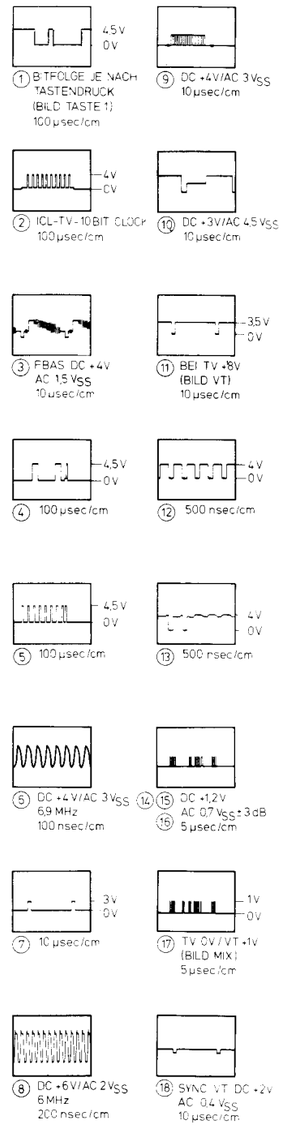
VIDEØTEXT - DECØDER 29504-108.04

TELETEXT DECODER
DECØDER TELEVIDEØ

•	IC 2830	IC 2840	C 2831	C 2832	C 2834	R 2831	R 2832	R 2849	D 2849	R 2804
	SDA 2216 E²PROM(1K)	SDA 2216 E²PROM(1K)	——	——	0,1U	——	——	4,7K	ZPD 24	——
	SDA 2516 E²PROM(1K)	SDA 2516 E²PROM(1K)	——	——	0,1U	——	——	——	——	——
	PCD 8572 E²PROM(1K)	PCD 8572 E²PROM(1K)	2,7N	2,7N	0,1U	10K	10K	——	——	——
	PCD 8582 E²PROM(2K)	——	——	2,7N	——	——	10K	——	——	4,7K
	SDA 2526 E²PROM(2K)	——	——	——	——	——	——	——	——	4,7K

NICHT BEI
NOT WITH
PAS POUR
MANCA NEL
IC 2800
7040 C 54011 NL-2


VIDEOTEXT - DECODER 29504-108.04
TELETEXT DECODER
DECODER TELEVIDEO
NICHT BEI NOT WITH PAS POUR MANCA NEL IC 2800
7040 C 54011 NL-2
IC 2830 | IC 2840 | C 2831 | C 2832 | C 2834 | R 2831 | R 2832 | R 2849 | D 2849 | R 2804
SDA 2216 E²PROM(1K) | SDA 2216 E²PROM(1K) | — | — | 0,1U | — | — | 4,7K | ZPD 24 | —
SDA 2516 E²PROM(1K) | SDA 2516 E²PROM(1K) | — | — | 0,1U | — | — | — | — | —
PCD 8572 E²PROM(1K) | PCD 8572 E²PROM(1K) | 2,7N | 2,7N | 0,1U | 10K | 10K | — | — | —
PCD 8582 E²PROM(2K) | — | 2,7N | — | — | 10K | — | — | — | 4,7K
SDA 2526 E²PROM(2K) | — | — | — | — | — | — | — | — | 4,7K
R
G
B
DATA
SYNC. FBAS
CHARACTER GENERATOR
I²C
DATA ACQUIS.
TIMING CHAIN
SDA 5241 (MOS) IC 2860
MEMORY INTERFACE
SPEICHER RAM MEMORY 8K X 8 STATIC IC2893(MOS)
SAA 5331 (MOS) IC 2850
VCO
CLOCK GENERATOR
PHASE DET.
G
DATA SLICER
SYNCHRON SEPA-RATOR
SENSE
13,875 MHZ
BC548 B T2812
BC548 B T2813
BC548 B T2816
BC548 B T2817
BC548 B T2884
SAND
TCS/SCS
10 X 47P C2881-C2890


1 BITFOLGE JE NACH TASTENDRUCK (BILD TASTE 1) 100 µsec/cm
2 ICL-TV-10BIT CLOCK 100 µsec/cm
3 FBAS DC +4V AC 1,5 VSS 10 µsec/cm
4 100 µsec/cm
5 100 µsec/cm
5 DC +4V/AC 3 VSS 6,9 MHz 100 nsec/cm
7 10 µsec/cm
8 DC +6V/AC 2 VSS 6 MHz 200 nsec/cm
9 DC +4V/AC 3 VSS 10 µsec/cm
10 DC +3V/AC 4,5 VSS 10 µsec/cm
11 BEI TV +8V (BILD VT) 10 µsec/cm
12 500 nsec/cm
13 500 nsec/cm
14 15 DC +1,2V AC 0,7 VSS ± 3 dB
15 5 µsec/cm
16 5 µsec/cm
17 TV 0V / VT +1V (BILD MIX) 5 µsec/cm
18 SYNC. VT DC +2V AC 0,4 VSS 10 µsec/cm

VT-Nachrüstung und Anpassungsabgleich

Beim Nachrüsten der Videotext-Steckkarte muß die Videotext-Steckerplatte entfernt werden

Der Einsteller R 2857 steht bei Auslieferung auf Linksanschlag (kleinste Höhenanhebung, ca. 2 dB). Treten trotz einwandfreiem Antennensignal Zeichenfehler auf, R 2857 langsam nach rechts verstellen, bis Fehler verschwinden. Nicht weiterdrehen, da Fehlerhäufigkeit wieder zunehmen kann.

Während des Abgleiches ist es notwendig, die Seite 199 ständig neu anzuwählen, da nur so die Seite neu eingelesen wird und eine Beurteilung der Fehlerschwelle möglich ist.

VT (GB: Teletext) instalation and matching adjustment

When fitting the Videotext (GB: Teletext) plug-in board, the Videotext plug plate has to be removed

The control R 2857 is set in the fully anti clockwise position when the unit is delivered (smallest treble boost: approx. 2 dB). If, with a perfect aerial signal character faults occur, turn R 2857 slowly clockwise until the faults disappear. Do not turn R 2875 up any further as error rate may increase again.

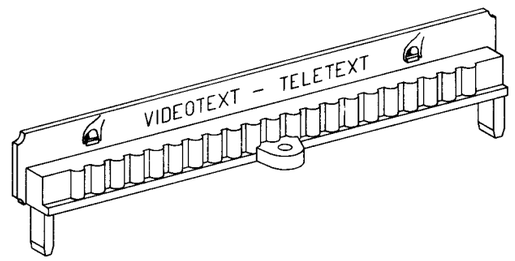
Page 199 must always be selected anew during the adjustment, as only this effects a new read-in of the page making it possible to evaluate the error level.

Montaggio e taratura d'addatamento della scheda ad innesto

Nel montare la scheda televideo togliere la piastrina televide(

Il regolatore R 2857 viene fornito col cursore girato completamente all'estrema sinistra (minima esaltazione delle alte frequenze, ca. 2 dB). Se si manifestano errori di carattere, nonostante un perfetto segnale d'antenna, girare lentamente il cursore di R 2857 verso destra fino ad eliminare gli errori. Non girarlo oltre può riaumentare la presenza degli errori.

Durante la taratura è necessario selezionare ripetutamente la pagina 199, poiché solo così è possibile una nuova immissione della pagina ed una valutazione della soglia degli errori.



Funktionsbeschreibung

Das Gerät kann wahlweise an Netzspannung oder an einer Gleichspannung (Batterie) betrieben werden. Bei Netzspannung wird durch den Brückengleichrichter D 621 eine positive Gleichspannung von ca. +300V gewonnen. Über die Primärwicklung des Netztrafos TR 651 - Anschlüsse 13 und 11 -liegt der Hochvolt-Schalttransistor T 636 an dieser Gleichspannung.
Die integrierte Schaltung IC 9600 (TDA 4601) übernimmt die Ansteuerung, Regelung und Überwachung des Schalt-Transistors T 636. Die Basis von T 636 wird über C 9641 und L 9646 von Pin 7 des IC 9600 mit einer Rechteckspannung von ca. 2,5 V angesteuert. In der Sperrphase von Transistor T 636 nimmt der magnetische Fluß im Sperrwandlertrafo ab, in den Sekundärwicklungen werden Spannungen induziert, deren Strom über die jetzt leitenden Dioden die Lastkreise mit Energie versorgt. Da nur während der Sperrphase des Transistors T 636 Energie in die Lastkreise übertragen wird, nennt man diese Version Sperrwandler-Netzteil. Die Schaltfrequenz des Transistors liegt je nach Last zwischen 15 und 70 kHz. Die größte Stromflußzeit und damit die höchste Leistungsübertragung wird bei niedriger Frequenz und geringem Tastverhältnis erreicht. Normale Betriebswerte sind etwa 30 kHz bei einem Tastverhältnis von 3:1.

Anlaufschaltung:
Über R 616, PTC R 617 und die Diode D 616 erhält der TDA 4601 an Pin 9 eine Anlaufspannung von ca. 12 V. Nach dem Anlaufen des Sperrwandlers wird während der Sperrphase des Transistors T 636, aus der Wicklung 15-1, eine stabile Spannung gewonnen. Diese gelangt über die Diode D 645 an den Pin 9 des IC 9600.
Sollte die Netzspannung < 170 V werden, wird beim Startvorgang aus der Wicklung 15-17 eine Spannung gewonnen und über Transistor T 9667 an Pin 9 eingespeist. Da diese Spannung nicht stabil ist, wird sie durch den Transistor T 9667 und die Diode D 9667 stabilisiert.
Transistor T 9662 wird über R 9662 leitend und sperrt den Transistor T 9660. Somit ist sichergestellt, daß das Relais RL 697 nicht schaltet.
Beim Einschalten des Gerätes erzeugt das IC 9600 an Pin 1 eine Referenzspannung und sperrt Transistor T 9633. Transistor T 9641 ist leitend und somit gelangt der Ansteuerimpuls von Pin 7 des IC 9600 über Transistor T 9641 an die Basis des Transistors T 636.

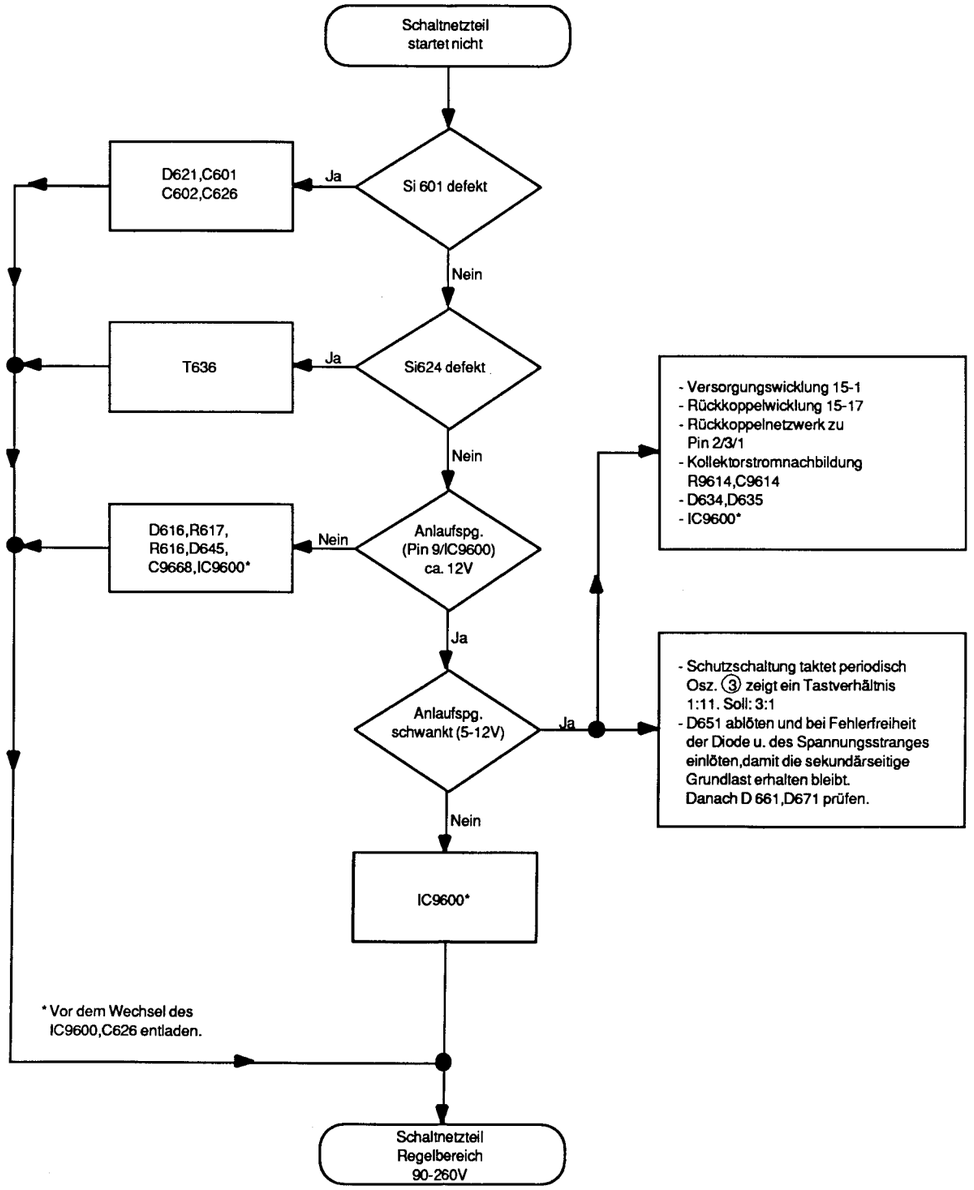
Normalbetrieb:
Am Eingang Pin 2 des TDA 4601 werden die Nulldurchgänge der von der Rückkoppelspule eingespeisten Frequenzen registriert und an eine interne Steuerlogik weitergegeben. Den Pin 3, einem Regeleingang, werden die gleichgerichteten Amplitudenänderungen der Rückkoppelspule (15-17) über den Einsteller R 647 zugeführt.
Das Schaltnetzteil ermöglicht folgende Betriebszustände:

a) Normalbetrieb
alle Versorgungsspannungen stehen zur Verfügung

b) Stand-by-Betrieb
T 681 sperrt T 684. Dadurch fehlt die + B`Spannung. Außerdem wird der Treiber IC 501 (Zeilenansteuerung) über T 501, T 502 am Pin 8 gesperrt.
T 514 (Zeilenablenktransistor) erhält an der Basis keine Ansteuerung und sperrt. Dadurch ist keine Hochspannung und keine Zeilenablenkung vorhanden.

Batteriebetrieb:
Bei Batteriebetrieb liegt die Batteriespannung am Emitter des Transistors T 9610 und gelangt über R 9612 an Pin 5 des IC 9600. Gleichzeitig über R 9613 an Pin 4.
Mit dieser Voraussetzung kann der IC 9600 starten.
Die Batteriespannung steht auch an den Transistoren T 9650 und T 9654 (Stabilisierung). Diese liefern eine Ausgangsspannung von ca. 10-11 V, über die Dioden D 9652 und D 9660, an Pin 9 der IC 9600. Mit dem Ladestrom des Kondensators C 9657 schwingt der Multivibrator - T 9657 und T 9658 - an. Die erzeugte Rechteckspannung wird über C 9658 ausgekoppelt an den Dioden D 9657 und D 9658 gleichgerichtet und der am Pin 9 stehenden Spannung überlagert. Dadurch wird eine minimale Betriebsspannung von 12 V erreicht.
Mit der stabilisierten Spannung von der Diode D 9652 wird über Diode D 698 das Relais RL 697 geschalten. Dadurch liegt die Batteriespannung am Trafo TR 651 an Kontakt 7/9. Über diese Wicklung gelangt die $U_{Batterie}$ an die Drains der Transistoren T 696 und T 699 und wird geschalten. Die Ansteuerung dieser Transistoren erfolgt von Pin 7/8 des IC 9600 über C 9664 und den Symmetrie-Widerständen an den Gates. Nach erfolgtem Anlauf wird die Erregerwicklung des Relais RL 697 über T 9660, D 645 von der Versorgungswicklung gespeist.

(D) Tips zur Fehlersuche - Primärseite liegt an Netzpotential. Gerät mit Netztrenntransformator betreiben!



Functional Description

This receiver allows to be operated either on the line or on a direct voltage (battery).
On mains operation, a positive DC voltage of approximately +300 V is obtained via the bridge rectifier D 621. This DC voltage is applied to the high voltage switching transistorT 636 via the primary winding of the mains transformer TR 651, connections 13 and 11. The integrated circuit IC 9600 (TDA 4601) carries out the functions of driving, controlling, and monitoring the switching transistor T 636. Pin 7 of IC 9600 provides a rectangular voltage of approximately 2.5 V via C 9641 and L 9646 to the base of T 636.
When the transistor T 636 is switched off the magnetic flux in the B.O.-type converter transformer decreases, voltage is induced into the secondary windings causing current to flow via the now conducting diodes which supply the load circuits with energy. As the energy is transferred into the load circuits during the switched off phase of the transistor T 636, this type of circuit is called B.O.-type Converter Power Supply Stage. The switching frequency of the transistor lies between 15 and 70 kHz depending on the load. The largest current flowing time and with it the highest power transfer occurs with the lowest frequency and lowest mark-to-space ratio. In normal operating values this is approximately 30 kHz with a mark-to-space ratio of 3:1.

Start-up Circuit
The starting voltage of approximately 12V for the TDA 4601 is provided via the resistors R 616, PTC R 617 and the diode D 616 to pin 9. After the B.O.-type converter has started up a stabilized voltage is obtained from the winding 15-1 during the switched off phase of the transistor T 636. This voltage is applied to pin 9 of IC 9600 via the diode D 645.
Should the mains voltage decrease to a level < 170V a voltage is obtained from the winding 15-17 during the start-up process and fed to pin 9 via transistor T 9667. Since the voltage is not stable transistor T 9667 and diode D 9667 are used to stabilize it.
Transistor T 9662 is made to switch on via R 9662 and the transistor T 9660 switches off thus ensuring that the relay RL 697 does not turn on.
When switching on the receiver IC 9600 provides a reference voltage on pin 1 and switches off transistor T 9633. Transistor T 9641 is actuated so that the drive pulse from pin 7 of IC 9600 is applied via transistor T 9641 to the base of transistor T 636.

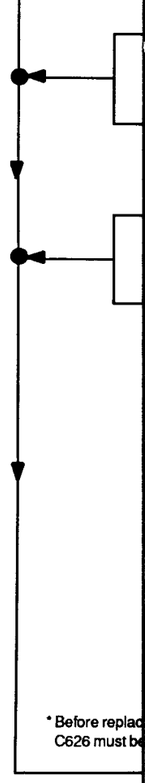
Normal Operation
On the input pin 2 of TDA 4601 the zero transitions of the frequencies fed in from the feedback winding are registered and passed on to an internal control logic. The rectified amplitude changes of the feedback winding (15-17) are fed to pin 3, a control input, via the adjustable preset R 647.
The Switched Mode Power Supply Circuit produces the following operating modes:

a)Normal operation.
In this mode, all supply voltages are produced.

b)Standby operation.
T 681 switches off T 684 so that the +B' supply is not present. Also the line driver IC 501 is switched off on pin 8 via T 501, T 502. The horizontal deflection transistor T 514 is switched off as there is no base drive. Therefore, no horizontal deflection and no EHT develops.

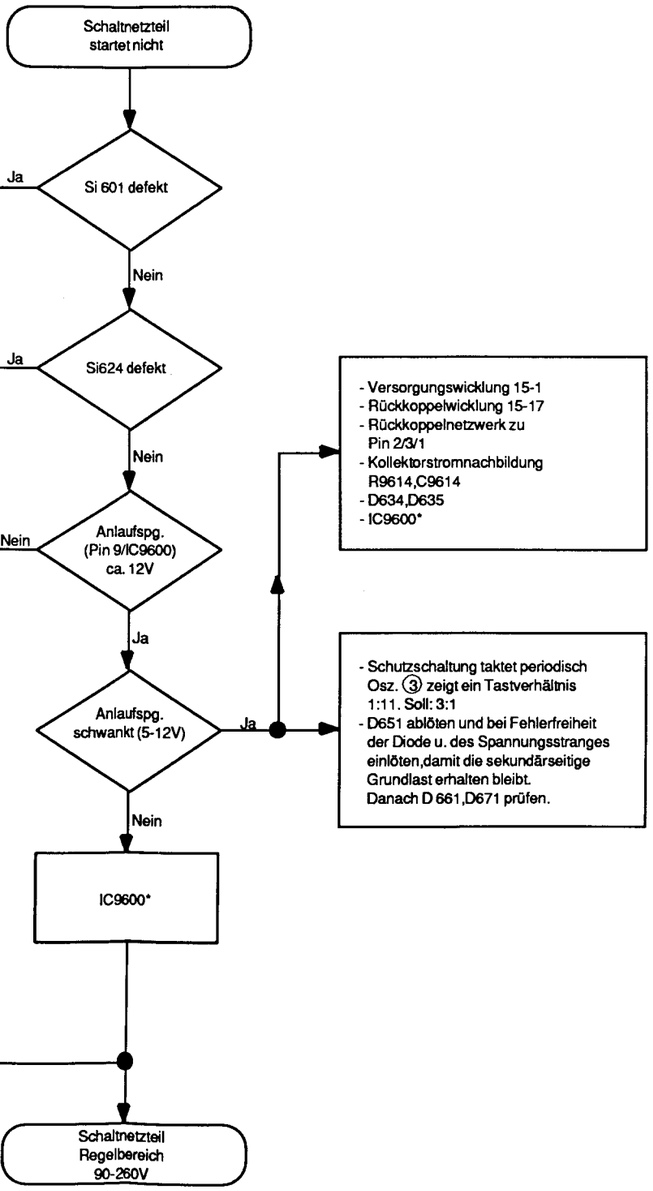
Battery Operation
When operated on the battery, the battery voltage is applied to the emitter of transistor T 9610 and is fed via R 9612 to pin 5 of IC 9600 and simultaneously to pin 4 via R 9613.
This is a prerequisite for IC 9600 to start up. The battery voltage is also applied to the transistors T 9650 and T 9654 (stabilization). They provide an output voltage of approxi-mately 10-11 V on pin 9 of IC 9600 via the diodes D 9652 and D 9660. By means of the charging current from C 9657 the multivibrator - T 9657 and T 9658 - starts to oscillate. The generated rectangular voltage is decoupled at C 9658, then rectified by the diodes D 9657 and D 9658, and superimposed on the voltage provided on pin 9. Thus, a minimum operating voltage of supplied by diode D 9 relay RL 697. The batt the transformer TR 65 fed to the drains of tr there. The transistors a and the balancing resi exciting winding of th winding via T 9660, D 64

(GB) Tips for Faul


* Before replac C626 must be

D 9652 wird über
Dadurch liegt die
t 7/9. Über diese
Transistoren T 696
steuerung dieser
r C 9664 und den
olgtem Anlauf wird
60, D 645 von der

eite liegt an Netzpotential. Gerät mit Netztrenntransformator betreiben!



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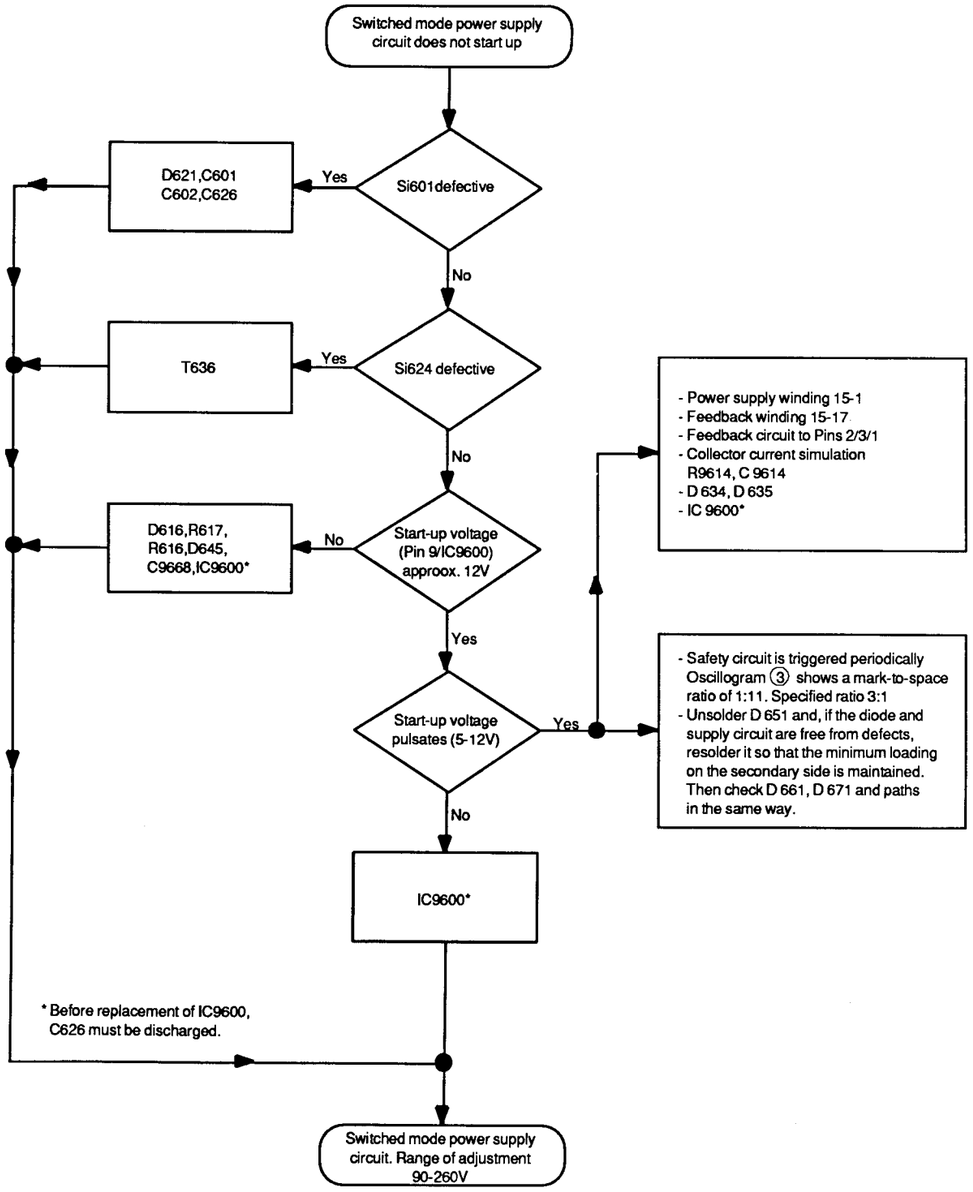
(GB) Tips for Fault location - Primary side is normally not isolated. Operate set with mains isolating transformer


Switched mode power supply circuit does not start up
Si601defective
Yes
D621,C601 C602,C626
No
Si624 defective
Yes
T636
No
Start-up voltage (Pin 9/IC9600) approox. 12V
No
D616,R617, R616,D645, C9668,IC9600*
Yes
Start-up voltage pulsates (5-12V)
Yes
No
IC9600*
- Power supply winding 15-1
- Feedback winding 15-17
- Feedback circuit to Pins 2/3/1
- Collector current simulation R9614, C 9614
- D 634, D 635
- IC 9600*
- Safety circuit is triggered periodically Oscillogram ③ shows a mark-to-space ratio of 1:11. Specified ratio 3:1
- Unsolder D 651 and, if the diode and supply circuit are free from defects, resolder it so that the minimum loading on the secondary side is maintained. Then check D 661, D 671 and paths in the same way.
* Before replacement of IC9600, C626 must be discharged.
Switched mode power supply circuit. Range of adjustment 90-260V

Descrizione circuitale

L'apparecchio può venir collegato alla tensione di rete oppure ad una tensione continua (batteria).Con la tensione di rete viene ricavata una tensione continua positiva di ca. +300V mediante il raddrizzatore a ponte. Attraverso l'avvolgimento primario del trasformatore di rete TR 651 (collegamenti 13 e 11), questa tensione continua viene applicata al transistor di commutazione T 636. l'Il circuito integrato IC 9600 (TDA 4601) provvede al pilotaggio, alla regolazione ed al controllo des transistor T 636.La base del transistor T 636 vienne comandata da una tensione rettangolare di ca. 2,5V che arriva attraverso C 9641 e L 9646 dal pin 7 dell'integrato IC 9600.

Nella fase di interdizione del transistor T 636 diminuisce il flusso magnetico nel trasformatore; negli avvolgimenti secondari vengono indotte correnti che attraverso i diodi ora conduttivi alimentano il carico. Poiché soltanto durante la fase di interdizione del transistor T 636 viene trasmessa energia nel carico, questo concetto viene denominato " alimentatore con convertitore ad interdizione". La frequenza di commutazione del transistor é compresa a secondo del carico tra 15 e 70 kHz. La maggiore corrente e quindi il massimo trasferimento di potenza si ottengono a bassa frequenza e con basso rapporto di cadenza. I valori normali di funzionamento si aggirano attorno ai 30 kHz con un rapporto di cadenza di 3 : 1.

Circuito di spunto:
Attraverso R 616 il, PTC R 617 ed il diodo D 616, il TDA 4601 riceve pin 9 una tensione di spunto di ca. 12V. Dopo l'innesco trasduttore, durante la fase di interdizione del transistor T 636, dall'avvolgimento 15-1, viene ricavata una tensione stabile che, attraverso il diodo D 645 giunge al pin 9 dell'integrato IC 9600.Se la tensione di rete dovesse scendere sotto i 170V, nella fase dell'avviamento viene generata una tensione dall'avvolgimento 15-17 ed inviata al pin 9 mediante il transistor T 9667. Poiché questa tensione non é stabile, essa viene resa tale dal transistor T9667 e dal diodo D 9667. Il transistor T 9662 diviene conduttivo attraverso R 9962 e blocca il transistor T 9660. In questo modo é assicurato che il relé RL 697 non viene attivato. All'atto dell'accensione dell'apparecchio, l'integrato IC 9600 produce al pin 1 una tensione di riferimento che blocca il transistor T 9633. Il transistor T 9641 é conduttivo e quindi l'impulso di comando del pin 7 di IC 9600 viene trasferito alla base del transistor T 636 mediante T 9641.

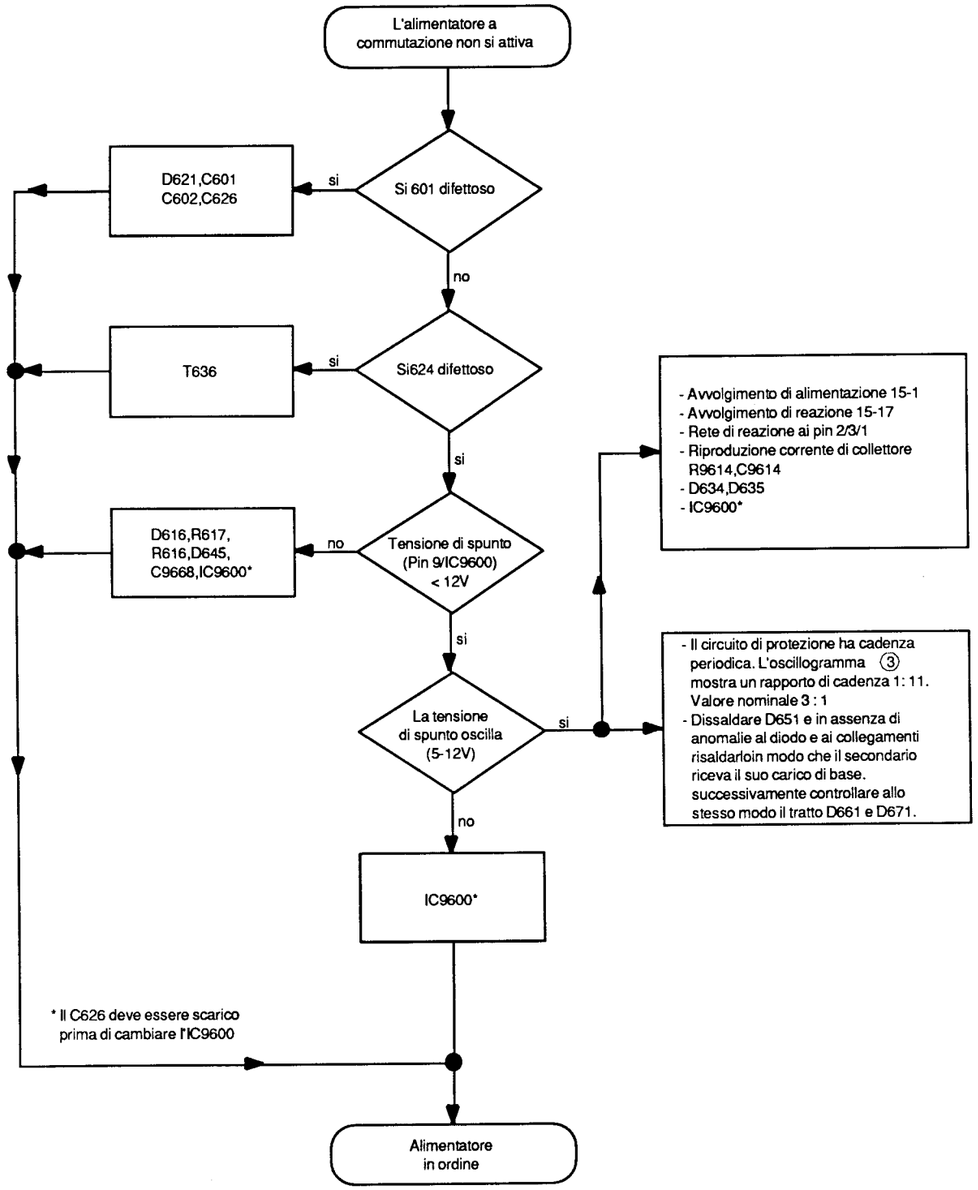
Regime normale:
All'ingresso, pin 2 del TDA 4601, vengono registrati i passaggi per lo zero delle funzioni a diversa frequenza accumulate nella bobina di reazione e trasferiti ad una logica di comando interna. Al pin 3, (un ingresso di regolazione) vengono applicate le variazioni d'ampiezza della bobina di reazione (15-17) raddizzate attraverso il regolatore R 647.
L'alimentatore a commutazione consente i seguenti regimi:

a) normale
Tutte le tensioni di alimentazione sone disponibili.

b) stand-by (attesa)
T 681 blocco T 684 per cui manca la tensione +B'. Inoltre lo stadio pilota IC 551 (pilotaggio della sezione di riga) viene bloccato al pin 8 attraverso T 501 e T 502. T 514 (transistor di deflessione di riga) non viene pilotato alla base e si blocca. Per questo motivo manca l'alta frequenza e la deflrssione di riga.

Funzionamento a batteria:
Con funzionamento a batteria, la tensione della batteria si trova all'emettitore del transistor T 9610 e giunge mediante R 9612 al pin 5 di IC 9600 e contemporaneamente al pin 4 mediante R 9613. In questa condizione l'integrato IC 9600 può dare inizio al proprio funzionamento.La tensione della batteria é anche ai capi dei transistor T 9650 e T 9654 (stabilizzazione). Questi forniscono al pin 9 di IC 9600 una tensione d'uscita di ca. 10-11V attraverso i diodi D 9652 e D 9660. Con la corrente di carica del condensatore C 9657 oscilla il multivibratore - T 9657 e T 9658 -.La tensione rettangolare prodotta viene prelevata mediante C 9658, quindi raddrizzata dai diodi D 9657 e D 9658 ed aggiunta alla tensione presente al pin 9.
In tal modo viene ottenuta una tensione di regime minima di 12V. Con la tensione stabilizzata dal diodo D 9652, viene inserito il relè RL 697 mediante il diodo D 698. Pertanto la tensione della batteria risulta applicata al trasformatore TR 651 ai contatti 7/9. Mediante questo avvolgimento, la tensione si trova successivamente ai drains dei transistor T 696 e T 699 e viene attivata. Il pilotaggio di questi transistor avviene dai pin 7/8 di IC 9600 tramite C 9664 e le resistenze simmetriche ai gates. Successivamente alla fase di spunto viene alimentato l'avvolgimento d'eccitazione del relé RL 697 mediante T 9660, D 645 dall'avvolgimento d'alimentazione.

(I) Suggerinenti per la ricerca guasti - Lato del primario collegato a potenziale di rete - Far funzionare l'apparecchio con un transformatore separatore di rete!


L'alimentatore a commutazione non si attiva
Si 601 difettoso
si
D621,C601 C602,C626
no
Si624 difettoso
si
T636
si
Tensione di spunto (Pin 9/IC9600) < 12V
no
D616,R617, R616,D645, C9668,IC9600*
si
La tensione di spunto oscilla (5-12V)
si
no
IC9600*
- Avvolgimento di alimentazione 15-1
- Avvolgimento di reazione 15-17
- Rete di reazione ai pin 2/3/1
- Riproduzione corrente di collettore R9614,C9614
- D634,D635
- IC9600*
- Il circuito di protezione ha cadenza periodica. L'oscillogramma (3) mostra un rapporto di cadenza 1: 11. Valore nominale 3 : 1
- Dissaldare D651 e in assenza di anomalie al diodo e ai collegamenti risaldarloin modo che il secondario riceva il suo carico di base. successivamente controllare allo stesso modo il tratto D661 e D671.
* Il C626 deve essere scarico prima di cambiare l'IC9600
Alimentatore in ordine

Service per I²C-Bu
Se l'apparecchio f
tensione o dalla de
tuare altri lavori di
Il microcomputer
111 (alla presa EUR
Nota:
Spegnere l'appare
meno con apparec

Tabella 1

Misura
+ H
Cadenza 4 MHz Reset
Bus I²C

Tabella 2
Possibili guasti ne

Guasto
Non é possibile sintonizzare la frequenza
Nessuna funzione ne accettata
Indicazione LED ta
Manca l'audio
Non viene commu il programma cor
Manca il valore a gico per luminosità contrasto contrasto colore
Accendendo con sto rete l'apparec commuta in posiz d'attesa
Nessun segnale F
Manca la funzio Televideo

separatore di rete!

Service per I²C-Bus

Se l'apparecchio funziona erroneamente e ció non dipende nè dall'alimentatore, nè dall'alta tensione o dalla deflessione, occorre controllare il bus I²C secondo la tabella ; prima di effettuare altri lavori di assistenza come da tabella 2.
Il microcomputer nell'unitá di comando IC 811 fornisce le istruzioni per tuner, televideo, T 111 (alla presa EURO/SCART) attraverso il bus I²C.
Nota:
Spegnere l'apparecchio durante la sostituzione di un modulo! Non togliere il modulo memmeno con apparecchio in posizione d'attesa! Fare attenzione alle norme MOS.

Tabella 1

Misura	Valore di misura	Punto di misura	Possibili guasti
+ H	5 V	Pin 3, IC 811	D 671, IC 673, IC 811
Cadenza 4 MHz Reset	4 MHz, 3 V_{pp} 4 V_{pp} solo all'atto dell'accensione	Pin 5, IC 811 Pin 28	F 808, IC 811 D 804, T 806, IC 811
Bus I²C	5 V_{pp}	Pin 19, 18, IC 811	I dati nel bus I²C sono presenti anche senza comando da TP o immissione tramite tastiera. Se i dati mancano: interrompere le linee SDA e SCL. Se ora i dati sono presenti, nel bus I²C c'è un sovraccarico. **Possibili cause del guasto:** tuner, televideo, IC 811, T 111

Tabella 2

Possibili guasti nell'apparecchio

Guasto	Possibile causa	Valore de misura	Punto di misura
Non é possibile sintonizzare la frequenza	Tuner (memoria, PLL)	+ 0,2–30 V	Pin 13, 15
	+ B' + H + A	+ 11,5 V + 5 V ca. + 44 V	Tuner Pin 16 Tuner Pin 2 Tuner Pin 1
Nessuna funzione viene accettata	+ H, IC 811	+ 5 V	IC 811 Pin 3
Indicazione LED errata	IC 811		
	F 808	4 MHz, 3 V	IC 811 Pin 5
Manca l'audio	Nessun riconoscimento di coincienza (FI/SYNC)	>3 V	IC 811 Pin 9
	IC 365	+ M/ca. 12 V	IC 365 Pin 2
Non viene commutato il programma con TP	Preamplif. IR	Segnale IR 5 V_{pp}	IC 811 Pin 2
Manca il valore analogico per luminosità contrasto contrasto colore	IC 811, IC 820 IC 811, IC 820 IC 811, IC 820	1-3 V 2-4 V 2-4 V	Colore/RGB Pin 10 Colore/RGB Pin 11 Colore/RGB Pin 12
Accendendo con tasto rete l'apparecchio commuta in posizione d'attesa	T 801	All'atto dell'accensione brevemente «LOW» (collettore).	IC 811 Pin 12
Nessun segnale FBAS	Tuner	ca. 10 V	Tuner Pin 3
	SINCR. FI	ca. 10 V	SYNCR. FI Pin 12
	+ B, + B'	+ 12 V	SYNCR. FI Pin 25, 24
Manca la funzione Televideo	+ B, + B'	+ 11,5 V	VT pin 2, 13
	bus I²C SDA	5V_{pp}	VT pin 9
	ICL	5V_{pp}	VT pin 11

Service checks on the I²C bus

If faluts occur in the set which cannot be attributed to the power supply unit, the EHT or the deflection system, the I²C bus should be checked using Table 1 before further service work is carried out using Table 2.
Via the I²C bus the microcomputer in the control unit IC 811 supplies control signals for the tuner, videotext (teletext) T 111 (to the EURO-AV-socket).
Note:
When a module is being changed, the set should be switched off completely. Modules must not be unplugged even in the »standby« mode! Observe MOS handling precautions.

Table 1

Test	Test Figures	Test Point	Possible faults
+ H	5 V	Pin 3, IC 811	D 671, IC 673, IC 811
4 MHz clock Reset	4 MHz, 3 V_{pp} 4 V_{pp} only at moment of switch on	Pin 5, IC 811 Pin 28	F 808, IC 811 D 804, T 806, IC 811
I²C bus	5 V_{pp}	Pin 19, 18, IC 811	The I²C bus data are present even without input from the remote control or keyboard. If data are absent disconnect the SDA and SCL lines. If data are then present on the I²C bus, the I²C bus is overloaded. Possible faults: Tuner, Videotext, IC 811, (Teletext), T 111

Table 2

Possible faults which can occur in any part of the set

Fault	Possible Cause	Test Figure	Test Point
No frequency tuning	Tuner (memory, PLL)	+ 0,2–30 V	Pin 13, 15
	+ B' + H + A	+ 11.5 V + 5 V ca. + 44 V	Tuner pin 16 Tuner pin 2 Tuner pin 1
No functions appecpted	+ H, IC 811	+ 5 V	IC 811 pin 3
Incorrect LED indication	IC 811		
	F 808	4 MHz, 3 V	IC 811 pin 5
No sound	No coincidence identification (IF/SYNC.)	>3 V	IC 811 pin 9
	IC 365	+ M/about 12 V	IC 365 pin 2
Programme cannot be change with remote control	IR-preamplifier	IR-signal 5 V_{pp}	IC 811 pin 2
No analog signals for Brightness Contrast Colour contrast	IC 811, IC 820 IC 811, IC 820 IC 811, IC 820	1-3 V 2-4 V 2-4 V	Colour/RGB, pin 10 Colour/RGB, pin 11 Colour/RGB, pin 12
Set switches to standby mode on operation of power button	T 801	Short-time "LOW" on switch-on (collector)	IC 811, pin 12
No CCVS	Tuner	approx. 10 V	Tuner, pin 3
	IF SYNC.	approx. 10 V	IF-SYNC., pin 12
	+ B, + B'	+ 11.5 V	IF-SYNC., pin 25, 24
No Videotext (Teletext)	+ B, + B'	+ 11.5 V	VT pin 2, 13
	I²C bus SDA	5V_{pp}	VT pin 9
	ICL	5V_{pp}	VT pin 11

Service am I²C-Bus

Bei Fehlfunktionen des Gerätes, die nicht auf Netzteil, Hochspannung und Ablenkung zurückzuführen sind, ist der I²C-Bus gemäß Tabelle 1 zu prüfen, bevor weitere Servicearbeiten nach Tabelle 2 durchgeführt werden.
Der µComputer in der Bedieneinheit IC 811 liefert Steuerbefehle für Tuner, Videotext, T 111 (zur EURO-AV-BUCHSE) über den I²C Bus.
Hinweis:
Bei Modulwechsel ist das Gerät generell auszuschalten!
Auch in Stellung »Bereitschaft« darf kein Modul gezogen werden! MOS-handling beachten.

Tabelle 1

Messung	Meßwert	Meßpunkt	Mögliche Fehler
+ H	5 V	Pin 3, IC 811	D 671, IC 673, IC 811
4 MHz Takt Reset	4 MHz, 3 V_{ss} 4 V_{ss} nur im Einschaltmoment	Pin 5, IC 811 Pin 28	F 808, IC 811 D 804, T 806, IC 811
I²C Bus	5 V_{ss}	Pin 19, 18, IC 811	Die I²C-Bus-Daten sind auch ohne TP-Bedienung oder Keyboardeingabe vorhanden. Bei fehlenden Daten: Die Leitungen SDA und SCL auftrennen. Sind dann die I²C-Bus-Daten vorhanden, liegt eine Überlastung des I²C-Bus vor. **Fehlerursache:** IC 811, Tuner, Videotext, T 111.

Tabelle 2

Mögliche Fehlerarten des Gesamtgerätes

Fehler	Mögliche Ursache	Meßwert	Meßpunkt
Keine Frequenzabstimmung	Tuner (Speicher, PLL)	+ 0,2–30 V	Pin 13, 15
	+ B' + H + A	+ 11,5 V + 5 V ca. + 44 V	Tuner Pin 16 Tuner Pin 2 Tuner Pin 1
Keine Bedienfunktion	+ H, IC 811	+ 5 V	IC 811 Pin 3
LED falsche Anzeige	IC 811		
	F 808	4 MHz, 3 V	IC 811 Pin 5
Kein Ton	Keine Koinzidenzkennung (ZF/SYNC.)	>3 V	IC 811 Pin 9
	IC 365	+ M/ca. 12 V	IC 365 Pin 2
Keine Programmschaltung mit TP	IR-Vorverstärker	IR-Signal 5 V_{ss}	IC 811 Pin 2
Keine Analogwerte für Helligkeit Kontrast Farbkontrast	IC 811, IC 820 IC 811, IC 820 IC 811, IC 820	1-3 V 2-4V 2-4 V	Farb/RGB Pin 10 Farb/RGB Pin 11 Farb/RGB Pin 12
Beim Einschalten mit der Netztaste schaltet das Gerät auf Bereitschaft.	T 801	beim Einschalten kurzzeitig »LOW« (Kollektor)	IC 811 Pin 12
Kein FBAS-Signal	Tuner	ca. 10 V	Tuner Pin 3
	ZF/SYNC.	ca. 10 V	ZF/SYNC. Pin 12
	+ B, + B'	+ 11,5 V	ZF/SYNC. Pin 25, 24
Kein Videotext	+ B, + B'	+ 11,5 V	VT Pin 2, 13
	I²C Bus SDA	5V_{ss}	VT Pin 9
	ICL	5V_{ss}	VT Pin 11

TABELLE UEBER 90° BILDROEHRENTYPEN
TABLE OF 90° PICTURE TUBE TYPES
TABELLA DI TIPI DI TUBI A 90°
TABLEAU DES MODELES DE TUBES CATHOD. 90°

○ - RUNDROEHRE / CIRCULAR PICTURE TUBE / TUBO AD ANGOLI TONDI / TUBE A COINS RONDS

□ - FLAT SQUARE-ROEHRE / FLAT SQUARE TUBE / TUBO FLAT SQUARE / TUBE FLAT SQUARE

⌀	TYPE TYPE TIPO MODELE	HERSTELLER MANUFACTURER DITTA FABRICANT	BEMERKUNG REMARK OSSERVAZIONE REMARQUE	L_V MH	L_H MH	R_V Ω	R_H Ω	U_H KV	$U_{FOC.}$ KV	SACHNUMMER ORDER NO. N.D'ORDINAZ. N. DE PRODUIT
14"/37CM	A 34 JLL 70 X 23	ORION	○ CLEAR GLASS	28	2,47	14,7	3,2	23	5,8-6,5	8300-030-252
14"/37CM	A 34 JLL 90 X 23	ORION	○ TINTED GLASS	28	2,47	14,7	3,2	23	5,8-6,5	8300-020-035
14"/37CM	A 34 EAC 00 X 03	PHILIPS	○ CLEAR GLASS	27,5	2,5	13,75	3,3	23	6-6,9	8300-030-252
14"/37CM	A 34 EAC 01 X 03	PHILIPS	○ TINTED GLASS	27,5	2,5	13,75	3,3	23	6-6,9	8300-020-035
14"/37CM	370 JMB 22-TC 03	MITSUBISHI	○ CLEAR GLASS	28	2,41	14,7	3,2	23	5,3-6	8300-030-252
14"/37CM	A 34 EAC 00 X 06	PHILIPS	○ CLEAR GLASS HOEHERE EMPFINDLICHKEIT / HIGHER SENS. SENS. MAGG. SENSIBILITE SUPERIEURE	27,5	2,5	13,6	3,3	23	6,1-6,9	8300-020-036
14"/37CM	A 34 EAC 01 X 06	PHILIPS	○ TINTED GLASS HOEHERE EMPFINDLICHKEIT / HIGHER SENS. SENS. MAGG. SENSIBILITE SUPERIEURE	27,5	2,5	13,6	3,3	23	6,1-6,9	
15"/40CM	A 36 EAM 00 X 01	PHILIPS	□ CLEAR GLASS	26,2	2,43	12,2	3,2	23	6,7-7,6	8300-020-188
15"/40CM	A 36 EAM 01 X 01	PHILIPS	□ TINTED GLASS	26,2	2,43	12,2	3,2	23	6,7-7,6	8300-020-189
15"/40CM	A 36 JAR 00 X 01(M)	TOSHIBA	□ CLEAR GLASS	28	2,5	14,7	3,2	22	6,7-7,4	8300-020-188
15"/40CM	A 36 JAR 40 X 03(MW)	TOSHIBA	□ TINTED GLASS	28	2,5	14,7	3,2	22	6,7-7,4	8300-020-189
15"/40CM	A 36 JUF 60 X 06	HITACHI	□ TINTED GLASS	28	2,5	15,4	3,7	22	6,7-7,4	
16"/42CM	A 38 EAC 00 X 03	PHILIPS	○ CLEAR GLASS	27,5	2,5	11,8	3,3	23	6,1-6,9	8300-030-364
16"/42CM	A 38 EAC 01 X 03	PHILIPS	○ TINTED GLASS	27,5	2,5	11,6	3,3	23	6,1-6,9	8300-020-190
16"/42CM	420 FSB 22-TC02(PY)	TOSHIBA	○ CLEAR GLASS	28	2,41	14,7	3,1	22	5,8-6,5	8300-030-365
16"/42CM	A 38 JAN 40 X 01(W)	TOSHIBA	○ TINTED GLASS	28	2,41	14,7	3,1	22	5,6-6,5	8300-020-190
16"/42CM	420 GAB 22-TC02	HITACHI	○ CLEAR GLASS	28	2,5	14,7	3,3	23	6,1-6,8	8300-030-365
16"/42CM	420 GUB 22-TC01	MITSUBISHI	○ CLEAR GLASS	28	2,41	14,7	3,2	22	5,9-6,6	8300-030-364
17"/45CM	A 41 EAM 00 X 01	PHILIPS	□ CLEAR GLASS	26	2,43	12,2	3,2	23	6,7-7,6	8300-020-201
17"/45CM	A 41 EAM 01 X 01	PHILIPS	□ TINTED GLASS	26	2,43	12,2	3,2	23	6,7-76	8300-020-202
17"/45CM	A 41 JAR 00 X 01(M)	TOSHIBA	□ CLEAR GLASS	28	2,5	14,7	3,2	22	6,7-7,4	8300-020-201
17"/45CM	A 41 JAR 40 X 02(MW)	TOSHIBA	□ TINTED GLASS	28	2,5	14,7	3,2	22	6,7-7,4	8300-020-202
19"/50CM	A 46 JAR 00 X 01(M)	TOSHIBA	□ CLEAR GLASS	28	2,2	14,7	2,6	25	7,6-8,4	8300-020-308
19"/50CM	A 46 JAR 40 X 01(W)	TOSHIBA	□ TINTED GLASS	28	2,2	14,7	2,6	25	7,6-8,4	8300-020-312
19"/50CM	A 46 JSF 01 X 03	HITACHI	□ CLEAR GLASS	28	2,2	13,8	3	25	7,8-8,8	8300-020-308
19"/50CM	A 46 JSF 61 X 03	HITACHI	□ TINTED GLASS	28	2,2	13,8	3	25	7,8-8,8	8300-020-312
20"/51CM	A 48 EAC 00 X 01	PHILIPS	○ CLEAR GLASS	27,5	2,5	11,8	3,3	25	7,3-8,3	8300-020-310
20"/51CM	A 48 EAC 01 X 01	PHILIPS	○ TINTED GLASS	27,5	2,5	11,8	3,3	25	7,3-8,3	8300-020-311
20"/51CM	510 YXB 22-TC02(SY)	TOSHIBA	○ CLEAR GLASS	28	2,14	14,7	2,7	25	7,6-8,4	8300-030-351
20"/51CM	A 48 JAN 43 X 01(W)	TOSHIBA	○ TINTED GLASS	28	2,14	14,7	2,7	25	7,6-8,4	8300-020.311
20"/51CM	510 ABWB 22-TC02	HITACHI	○ CLEAR GLASS	28,7	2,4	13,8	3,2	25	7,7-8,5	8300-030-351
20"/51CM	A 48 JLL 90 X 01	ORION	○ TINTED GLASS	28	2,14	14,7	2,15	25	7,3-8,3	
21"/55CM	A 51 JAR 00 X 03(M)	TOSHIBA	□ CLEAR GLASS	28	2,11	14,7	2,6	25	7,6-8,4	8300-020-535
21"/55CM	A 51 JAR 43 X 01(MW)	TOSHIBA	□ TINTED GLASS	28	2,11	14,7	2,6	25	7,6-8,4	8300-020-536
21"/55CM	A 51 JSX 01 X 03	HITACHI	□ CLEAR GLASS	28	2,2	13,8	3	25	7,8-8,8	8300-020-535
21"/55CM	A 51 JSX 61 X 03	HITACHI	□ TINTED GLASS	28	2,2	13,8	3	25	7,8-8,8	8300-020-536

CUC 3491

Pos. No.	Fig. No.	Bestell-Nr. Part No./Ref. Nr. d'ordinazioni		Benennung	Description	Denominazione
				Steckkarten	Plug-in circuit boards	Schede
1		29504-101.01		Kabeltuner	Cable tuner	Tuner per TV cavo
2		29504-162.65		ZF-Verstärker	IF-amplifier	FI-amplificatore
5		29504-165.01		Farb/RGB (Multi)	Colour RGB (Multi)	Colore RGB (Multi)
7		29504-108.92		Videotext	Videotext	Televideo
8		29305-007.02		Netzbaustein	Mains module	Modulo interr.
				Bedienungseinheit (29501-061.02) (kein E-Teil)	Keyboard unit (29501-061.02) (no spare part)	Unita comandi (29501-061.02) (nessun pezzo di ricambio)
10		29624-415.01		Frontplatte m. Tasten	Front panel w. buttons	Piastra frontale con tasti
12		29303-506.18		Snap-Folie	Elastic foil	Foglia elastica
13		29304-074.41		Keyboardplatte	Keyboard P.C B.	Piastra tastiera
14		29304-013.17		LED-Platte kpl.	LED-Plate cpl.	Piastra LED cpl.
				Mechanische Teile	Mechanical parts	Parti meccaniche
15		29304-070.59		Bildrohrplatte kpl.	Picture tube plate cpl.	Piastra cinescopio cpl.
15.1		29303-751.97		Bildrohrfassung	Picture tube socket	Zoccolo cinescopio
17		29700-328.01		Bausteinhalter	Module holder	Supporto modulo
18		29703-291.02		Netzschalter	Mains switch	Interruttore di rete
19		29303-452.01		Netzsteckerplatte	Mains plug plate	Interr. di spina piastra
20		09621-113.02	4x	Sicherungshalter	Fuse holder	Portafusibile
21		29303-153.12	3x	Montageclip f. IC	Mounting clip for IC	Clip di montaggio p. IC
22		29303-153.01		Montageclip f. IC	Mounting clip for IC	Clip di montaggio p. IC
23		29303-153.02		Montageclip f. Trans.	Mounting clip f. Trans.	Clip di montaggio p. Trans.
24		29303-156.03		Isolierscheibe für BU 508 D	Insulating washer for BU 508 D	Rondella isolante p. BU 508 D
25		29303-393.01		Kopfhörerbuchse	EAR phone socket	Presa cuffia
26		29303-119.03		Euro-AV-Buchse	Euro-AV-socket	Presa Euro/Scart
27		29500-503.05		Abdeckung (AV)	Cover (AV)	Copertura (AV)
28		29700-324.01		Kabelhalter	Cable clamp	Supporto cavo
29		29700-282.91		Kabelhalter	Cable clamp	Supporto cavo
				Elektrische Teile	Electrical parts	Parti elettriche
K536		8324-801-077		Kaskade B92945-S7154-M 573 (!)	Kascade B 92945-S7154-M 573	Moltiplic. in cascate B 92945-S 7154-M 573
		72008-090.02		Fokusregler	Focusing control	Regolatore del fuoco

Pos. No. | Fig. No. | Bes Par Réf Nr.

TR
TR
TR
TR

F 808

L 336
L 337
L 514
L 520
L 533
L 601
L 672
L 673
L 676
L 806
L 1213

IC 365
IC 501
IC 811
IC 820
IC 881
IC 1211

T 111
T 501
T 502
T 514
T 652
T 681
T 682
T 686
T 736
T 741
T 756

ricambi (estratto)

ominazione
hede
her per TV cavo
-amplificatore
lore RGB (Multi)
levideo
dulo interr.
ita comandi
9501-061.02)
essun pezzo di ricambio)
astra frontale con tasti
glia elastica
astra tastiera
astra LED cpl.
cti meccaniche
astra cinescopio cpl.
ccolo cinescopio
pporto modulo
terruttore di rete
terr. di spina piastra
tafusibile
ip di montaggio p. IC
ip di montaggio p. IC
ip di montaggio p. Trans.
ndella isolante
BU 508 D
esa cuffia
esa Euro/Scart
pertura (AV)
pporto cavo
pporto cavo
rti elettriche
ltiplic. in cascate
92945-S 7154-M 573
golatore del fuoco

Pos. No.	Fig. No.	Bestell-Nr. Part No. Réf. Nr. d'ordinazioni	Benennung Description Désignation Denominazione	
TR		29500-625.97		
TR		29201-018.07		
TR		29500-627.97		
TR		29201-018.02		
F 808		8602-331-085	4,0 MG	
L 336		8140-526-451		
L 337		8140-526-451		
L 514		29500-804.08		
L 520		29203-111.97		
L 533		09240-110.21		
L 601		29701-644.95		
L 672		8140-526-320		
L 673		8140-525-950		
L 676		8140-525-974		
L 806		8140-526-327		
L 1213		07202-370.97		
IC 365		8305-146-554	DL 60554	
IC 501		8305-338-140	TDA 8140	
IC 811		8305-684-285	ZC 84285 P	
IC 820		8305-205-910	MC 144111 (MOS)	
IC 881		8305-202-242	UAA 2022	
IC 1211		8305-334-052	TDA 4052	
T 111		8303-205-548	BC 548 B	
T 501		8303-201-548	BC 548	
T 502		8303-201-548	BC 548	
T 514		8302-260-509	BU 508 D	
T 652		8303-205-548	BC 548 B	
T 681		8303-205-548	BC 548 B	
T 682		8303-201-548	BC 548	
T 686		8303-201-548	BC 548	
T 736		8303-401-421	BF 421	
T 741		8303-401-422	BF 422	
T 756		8303-401-421	BF 421	

Pos. No.	Fig. No.	Bestell-Nr. Part No. Réf. Nr. d'ordinazioni	Benennung Description Désignation Denominazione	
T 761		8303-401-422	BF 422	
T 776		8303-401-421	BF 421	
T 781		8303-401-422	BF 422	
T 801		8303-206-548	BC 548 C	
T 806		8303-200-548	BC 548	
T 811		8303-204-548	BC 548 B	
T 1204		8303-204-549	BC 549 B	
D 331		8309-720-056	ZPD 5,6	
D 333		8309-201-103	BA 157	
D 354		8309-214-018	TD 190	
D 355		8309-720-071	ZPD 7,5	
D 411		8309-210-138	1N 4936	
D 421		8309-210-401	1N 4934	
D 422		8309-214-007	TD 041	
D 502		8309-215-020	1N 4004	
D 503		8309-201-103	BA 157	
D 522		8309-214-010	TD 129	
D 528		8309-204-268	BYV 16 TFK	
D 551		8309-214-007	TD 041	
D 552		8309-720-360	ZPD 36	
D 553		8309-214-007	TD 041	
D 616		8309-215-127	1N 4007	
D 621		8308-560-520	B 380/C3700/2200 FAG	
D 627		8309-517-077	BYW 76 COD	
D 645		8309-517-033	BYW 32 TFK	
D 651		8309-517-077	BYW 76 COD	
D 654		8309-201-101	BA 159	
D 655		8309-214-018	TD 190	
D 661		8309-517-073	BYW 72 COD	
D 671		8309-517-074	BYW 72	
D 687		8309-720-062	ZPD 6,2	
D 697		8309-214-018	TD 190	
D 698		8309-215-020	1N4004	
D 707		8309-707-012	ZPD 4,7	
D 711		8309-201-005	BA 157	
D 734		8309-215-045	1N 4148	
D 754		8309-215-045	1N 4148	
D 774		8309-215-045	1N 4148	
D 781		8309-215-045	1N 4148	
DP800		8309-931-232	HD 2131 G	
D 804		8309-214-010	TD 129	
D 850		8309-214-010	TD 129	
D 873		8309-214-010	TD 129	
D 883		8309-214-010	TD 129	
D 1201		8309-211-705	SFH 205 G	
C 462		8563-731-424	0,33 uF/160 V	
C 516		8525-040-830	0,6 uF/250 V (!)	

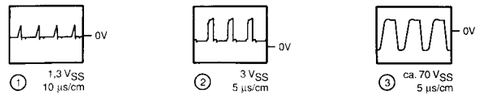
Pos. No.	Fig. No.	Bestell-Nr. Part No. Réf. Nr. d'ordinazioni	Benennung Description Désignation Denominazione	
C 517		8525-040-830	0,6 uF/250 V (!)	
C 518		8515-911-002	560 pF/1600 V (!)	
C 521		8515-722-221	0,21 uF/160 V	
C 522		8515-722-221	0,21 uF/160 V	
C 523		8515-911-063	5200 pF/1600 V	
C 525		8563-731-622	0,022uF/1000 V (!)	
C 526		8563-731-622	0,022uF/1000 V (!)	
C 527		8660-097-219	220pF/20% (!)	
C 528		8650-090-477	270pF/2 KV	
C 536		8531-510-343	0,68uF/160 V	
C 601		8599-990-025	0,15uF/250 V (!)	
C 602		8599-990-025	0,15uF/250 V (!)	
C 609		8563-732-425	0,1uF/250 V (!)	
C 611		8660-097-238	2200 pF	
C 613		8660-097-238	2200pF	
C 621		8650-090-510	1000pF/1 KV	
C 622		8650-090-510	1000pF/1 KV	
C 623		8650-090-510	1000pF/1 KV	
C 624		8650-090-510	1000pF/1 KV	
C 626		8443-306-055	220uF/385 V	
C 637		8515-911-091	2200pF/2000 V (!)	
C 651		8650-090-477	270pF/2 KV	
C 661		8650-090-477	270pF/2 KV	
C 671		8650-090-477	270pF/2 KV	
RL 655		29500-714.97		
RL 697		29500-715.97		

MOS = Vorschriften beachten
Observe MOS precautions
Rispettare le norme MOS

Pos. No.	Fig. No.	Bestell-Nr. Part No. Réf. Nr. d'ordinazioni	Benennung Description Désignation Denominazione	
R 333		8700-229-025	AX 0207-GA NB (!)	
R 337		8705-269-299	12 kOhm	
R 341		8705-369-027	12 Ohm	
R 367		8700-229-023	8,2 Ohm NB (!)	
R 433		8790-047-151	10 Ohm	
R 436		8790-047-109	100 Ohm	
R 513		8705-329-241	41 Ohm	
R 516		8730-018-977	0,1 Ohm	
R 524		8766-397-017	4,7 Ohm (!)	
R 525		8735-003-033	0,33 Ohm (!)	
R 528		8705-221-225	10 Ohm (!)	
R 531		8311-201-073	PTC 2 G/P 2390-J 146 (!)	
R 532		8730-179-229	15 Ohm	
R 533		8765-044-125	150 kOhm	
R 623		8311-400-125	VDR VZA 275 (!)	
R 624		8718-250-158	3,6 mOhm VDE (!)	
R 627		8718-250-014	4,7 mOhm VDE (!)	
R 648		8750-210-049	100 Ohm	
R 661		8735-003-022	0,22 Ohm (!)	
R 671		8735-003-022	0,22 Ohm (!)	
R 688		8790-050-022	300 Ohm	
R 738		8700-248-984	AX 0411 0,22 Ohm NB (!)	
R 801		8766-357-169	10 mOhm	
R 802		8766-357-169	10 mOhm	
Si 601		8315-617-006	2,5 A/T (!)	
Si 624		8315-618-002	1,25 A/T (!)	

Bauteilhinweis
(!) Hinweis:
Bauelemente nach VDE-bzw. IEC-Richtlinien. Im Ersatzfall nur Teile mit gleicher Spezifikation verwenden!
Notes on components (!) Cautions
Components to VDE or IEC quidelines. Only use components with the same specifications for replacement!
(!) nota:
Componenti secondo le norme VDE risp. te iec. in caso di sostituzione impiegaresolo componenti con le stesse caratteristiche!

Änderungen vorbehalten · Alterations reserved · Tous droits de modifications réservés · Con riserva di modifiche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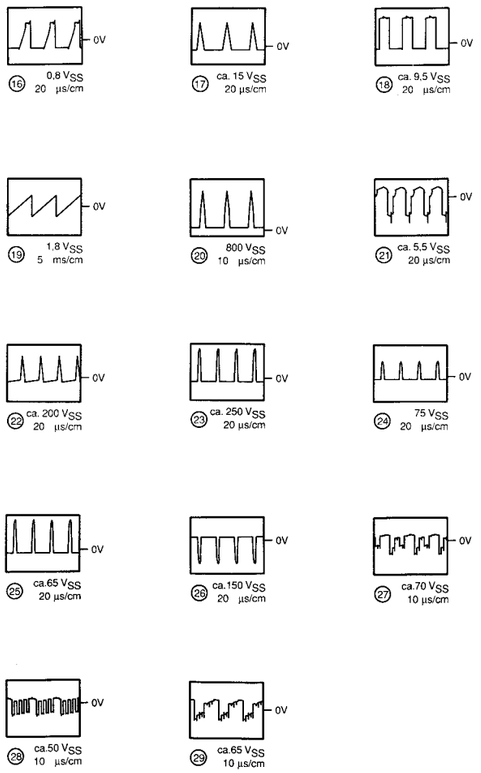
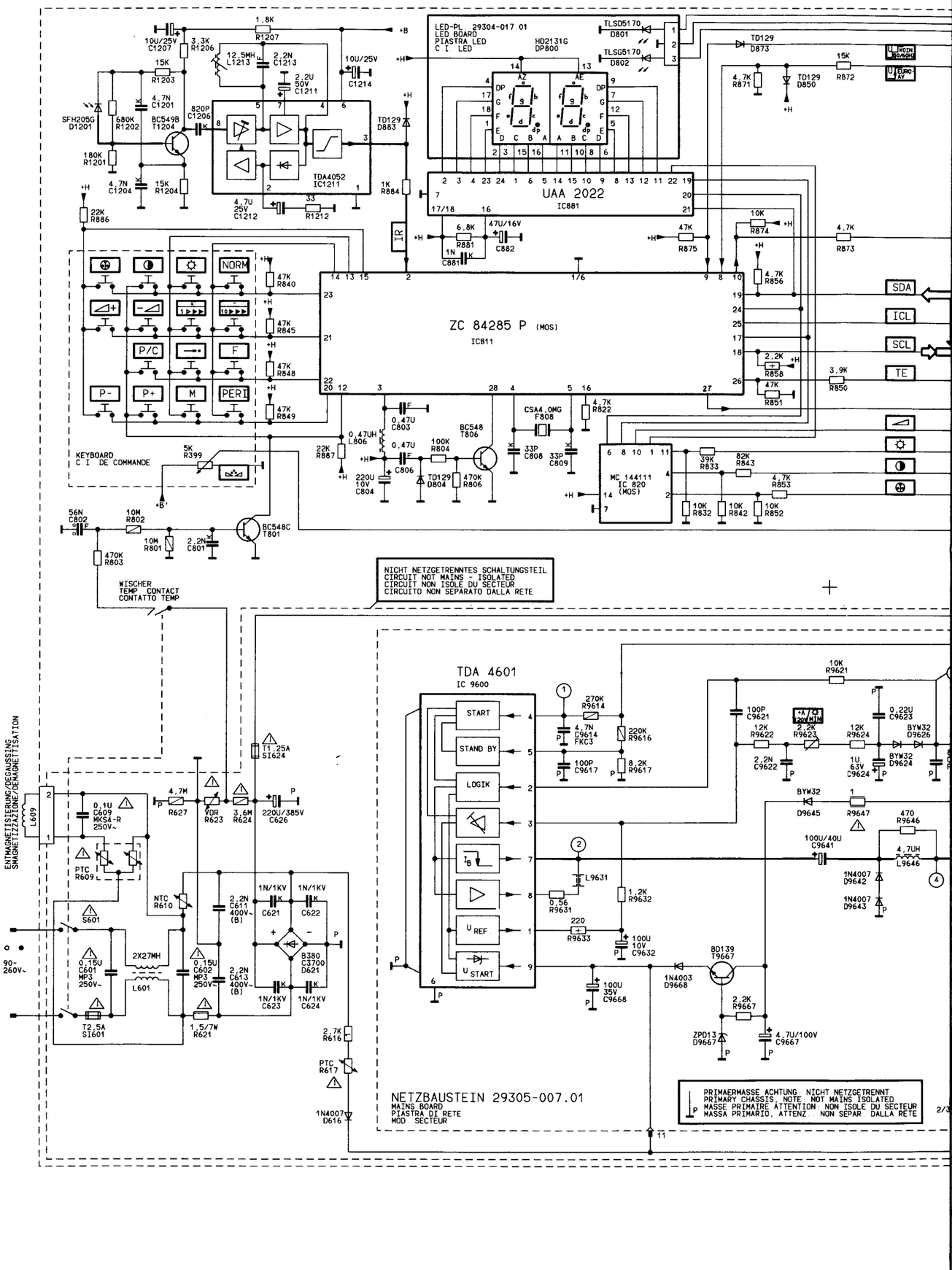
1 1,3 VSS 10 µs/cm
0V
2 3 VSS 5 µs/cm
0V
3 ca. 70 VSS 5 µs/cm
0V
4 10 VSS 5 µs/cm
0V
5 780 VSS 5 µs/cm
0V
6 20 VSS 5 µs/cm
0V
7 0,8 VSS 5 ms/cm
0V
8 ca.9,5 VSS 5 ms/cm
0V
9 ca. 9,5 VSS 10 µs/cm
0V
10 ca. 3,8 VSS 5 ms/cm
0V
11 ca. 2,2 VSS 10 µs/cm
0V
12 20 VSS 5 ms/cm
0V
13 20 VSS 5 ms/cm
0V
14 2,2 VSS 5 ms/cm
0V
15 ca. 42 VSS 5 ms/cm


0V
16 0,8 VSS 20 µs/cm
0V
17 ca. 15 VSS 20 µs/cm
0V
18 ca. 9,5 VSS 20 µs/cm
0V
19 1,8 VSS 5 ms/cm
0V
20 800 VSS 10 µs/cm
0V
21 ca. 5,5 VSS 20 µs/cm
0V
22 ca. 200 VSS 20 µs/cm
0V
23 ca. 250 VSS 20 µs/cm
0V
24 75 VSS 20 µs/cm
0V
25 ca.65 VSS 20 µs/cm
0V
26 ca.150 VSS 20 µs/cm
0V
27 ca.70 VSS 10 µs/cm
0V
28 ca.50 VSS 10 µs/cm
0V
29 ca.65 VSS 10 µs/cm


LED-PL 29304-017 01
LED BOARD
PIASTRA LED
C I LED
HD2131G
DP800
TLSO5170 D801
TLSG5170 D802
TD129 D873
TD129 D850
TD129 D883
UAA 2022
IC881
ZC 84285 P (MOS)
IC811
TDA4052 IC1211
MC 144111 IC 820 (MOS)
KEYBOARD
C I DE COMMANDE
NORM
P/C
F
P-
P+
M
PERI
NICHT NETZGETRENNTES SCHALTUNGSTEIL
CIRCUIT NOT MAINS - ISOLATED
CIRCUIT NON ISOLE DU SECTEUR
CIRCUITO NON SEPARATO DALLA RETE
WISCHER
TEMP CONTACT
CONTATTO TEMP
TDA 4601
IC 9600
START
STAND BY
LOGIK
U REF
U START
ENTMAGNETISIERUNG/DEGAUSSING
SMAGNETIZZAZIONE/DEMAGNETISATION
90-260V~
PTC R609
NTC R610
PTC R617
2X27MH L601
B380 C3700 D621
1N4007 D616
NETZBAUSTEIN 29305-007.01
MAINS BOARD
PIASTRA DI RETE
MOD SECTEUR
PRIMAERMASSE ACHTUNG NICHT NETZGETRENNT
PRIMARY CHASSIS NOTE NOT MAINS ISOLATED
MASSE PRIMAIRE ATTENTION NON ISOLE DU SECTEUR
MASSA PRIMARIO ATTENZ NON SEPAR DALLA RETE
SDA
ICL
SCL
TE

K.-TUNER 29504-101.01
CABLE TV TUNER
TUNER TV CAVO
TUNER TELEDISTRIBUTION

ZF/SYNC. 29504-162.67
IF SYNC.
SINCR. FI

EURO-AV-BUCHSE/EURO-AV SOCKET
PRESA EURO AV/EMBASE PERI TV

FARB/RGB 29504-165.01 MULTI
COLOUR/RGB
COLORE/RVB
DECODEUR/RVB

VIDEOTEXT/TELETEXT 29504-108.04
TELEVIDEO
SENDERKENNUNG/STATION IDENT. -108.51
IDENT. STAZIONE/IDENT EMETTEUR
VT-STECKERPLATTE -108 92
TELETEXT SOCKET BOARD
PIASTRA A SPINA TELEVIDEO
PLAQUE ENFICHABLE ANTIOPE

OFFEN B. IT
OPEN IN IT VERS
APERTO NELLA VERS. IT
OUVERT POUR VERS. IT.

VIDEOTEXT,3
TELETEXT
TELEVIDEO
ANTIOPE

I²C-BUS

TR651 ⚠
29500-627.97

RUECKSCHLAG-GENERATOR
FLYBACK GEN.

TDA 8170
IC411

TDA 8140
IC501

MC 144111
IC 820
(MOS)

TDA1905
IC365

PRIMAERMASSE ACHTUNG. NICHT NETZGETRENNT
PRIMARY CHASSIS, NOTE, NOT MAINS ISOLATED
MASSE PRIMAIRE ATTENTION. NON ISOLE DU SECTEUR
MASSA PRIMARIO, ATTENZ. NON SEPAR. DALLA RETE

CUC 3490
CHASSIS 29701-054 01 14"
TELAIO -054 24 21"

EURO-AV-BUCHSE/EURO-AV SOCKET
PRESA EURO AV/EMBASE PERI TV

AUDIO
EURO-AV VIDEO
EURO-AV AUDIO

OFFEN B IT
OPEN IN IT VERS
APERTO NELLA VERS IT
OUVERT POUR VERS IT

29504-162.67

VIDEOTEXT/TELETEXT 29504-108.04
TELEVIDEO

SENDERKENNUNG/STATION IDENT -108.51
IDENT STAZIONE/IDENT EMETTEUR

VT-STECKERPLATTE -108.92
TELETEXT SOCKET BOARD
PIASTRA A SPINA TELEVIDEO
PLAQUE ENFICHABLE ANTIOPE

FARB/RGB 29504-165.01 MULTI

COLOUR/RGB
COLORE/RVB
DECODEUR/RVB

TDA 8170 IC411
RUECKSCHLAG-GENERATOR FLYBACK GEN.

TDA 8140 IC501
UB<7V >1600 C

TDA1905 IC365

BILDROHRPL. 29304-070.57
CRT BASE
PIASTRA CINESC
C.I. TUBE CATHOD.

L522

TR526
29201-018.02
K536

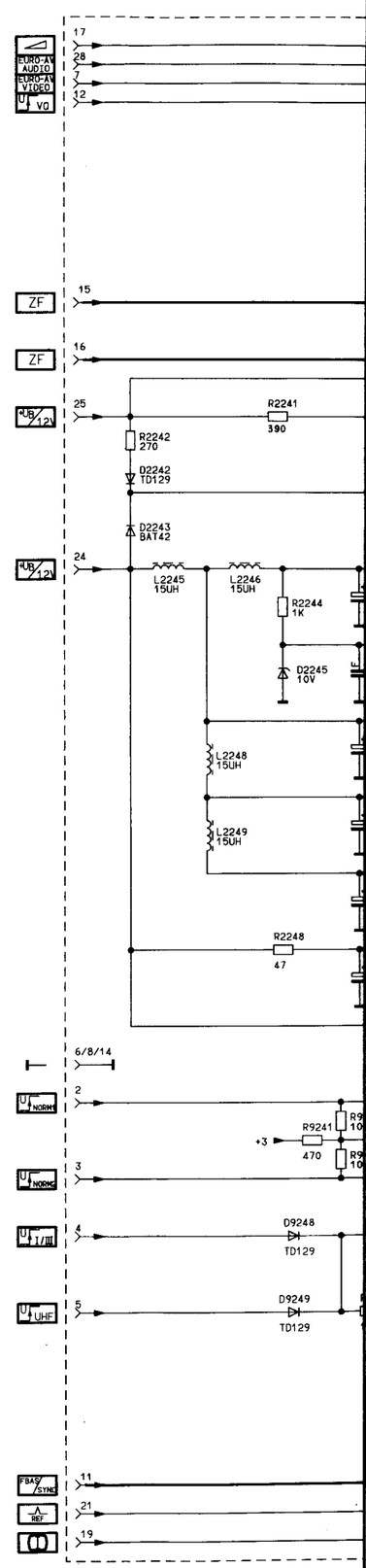
CUC 3490
CHASSIS 29701-054.01 14"
TELAIO -054.24 21"

TABELLE UEBER 90° BILDROEHRENTYPEN
TABLE OF 90° PICTURE TUBE TYPES
TABELLA DI TIPI DI TUBI A 90°
TABLEAU DES MODELES DE TUBES CATHOD. 90°

○ = RUNDROEHRE / CIRCULAR PICTURE TUBE / TUBO AD ANGOLI TONDI / TUBE A COINS RONDS

□ = FLAT SQUARE-ROEHRE / FLAT SQUARE TUBE / TUBO FLAT SQUARE / TUBE FLAT SQUARE

⌀	TYPE TYPE TIPO MODELE	HERSTELLER MANUFACTURER DITTA FABRICANT	BEMERKUNG REMARK OSSERVAZIONE REMARQUE	L_V MH	L_H MH	R_V Ω	R_H Ω	U_H KV	$U_{FOC.}$ KV	SACHNUMMER ORDER NO N D'ORDINAZ. N. DE PRODUIT
14"/37CM	A 34 JLL 70 X 23	ORION	○ CLEAR GLASS	28	2,47	14,7	3,2	23	5,8-6,5	8300-030-252
14"/37CM	A 34 JLL 90 X 23	ORION	○ TINTED GLASS	28	2,47	14,7	3,2	23	5,8-6,5	8300-020-035
14"/37CM	A 34 EAC 00 X 03	PHILIPS	○ CLEAR GLASS	27,5	2,5	13,75	3,3	23	6-6,9	8300-030-252
14"/37CM	A 34 EAC 01 X 03	PHILIPS	○ TINTED GLASS	27,5	2,5	13,75	3,3	23	6-6,9	8300-020-035
14"/37CM	370 JMB 22-TC 03	MITSUBISHI	○ CLEAR GLASS	28	2,41	14,7	3,2	23	5,3-6	8300-030-252
14"/37CM	A 34 EAC 00 X 06	PHILIPS	○ CLEAR GLASS HOEHERE EMPFINDLICHKEIT / HIGHER SENS. SENS. MAGG SENSIBILITE SUPERIEURE	27,5	2,5	13,6	3,3	23	6,1-6,9	8300-020-036
14"/37CM	A 34 EAC 01 X 06	PHILIPS	○ TINTED GLASS HOEHERE EMPFINDLICHKEIT / HIGHER SENS. SENS. MAGG. SENSIBILITE SUPERIEURE	27,5	2,5	13,6	3,3	23	6,1-6,9	
15"/40CM	A 36 EAM 00 X 01	PHILIPS	□ CLEAR GLASS	26,2	2,43	12,2	3,2	23	6,7-7,6	8300-020-188
15"/40CM	A 36 EAM 01 X 01	PHILIPS	□ TINTED GLASS	26,2	2,43	12,2	3,2	23	6,7-7,6	8300-020-189
15"/40CM	A 36 JAR 00 X 01(M)	TOSHIBA	□ CLEAR GLASS	28	2,5	14,7	3,2	22	6,7-7,4	8300-020-188
15"/40CM	A 36 JAR 40 X 03(MW)	TOSHIBA	□ TINTED GLASS	28	2,5	14,7	3,2	22	6,7-7,4	8300-020-189
15"/40CM	A 36 JUF 60 X 06	HITACHI	□ TINTED GLASS	28	2,5	15,4	3,7	22	6,7-7,4	
16"/42CM	A 38 EAC 00 X 03	PHILIPS	○ CLEAR GLASS	27,5	2,5	11,8	3,3	23	6,1-6,9	8300-030-364
16"/42CM	A 38 EAC 01 X 03	PHILIPS	○ TINTED GLASS	27,5	2,5	11,6	3,3	23	6,1-6,9	8300-020-190
16"/42CM	420 FSB 22-TC02(PY)	TOSHIBA	○ CLEAR GLASS	28	2,41	14,7	3,1	22	5,8-6,5	8300-030-365
16"/42CM	A 38 JAN 40 X 01(W)	TOSHIBA	○ TINTED GLASS	28	2,41	14,7	3,1	22	5,6-6,5	8300-020-190
16"/42CM	420 GAB 22-TC02	HITACHI	○ CLEAR GLASS	28	2,5	14,7	3,3	23	6,1-6,8	8300-030-365
16"/42CM	420 GUB 22-TC01	MITSUBISHI	○ CLEAR GLASS	28	2,41	14,7	3,2	22	5,9-6,6	8300-030-364
17"/45CM	A 41 EAM 00 X 01	PHILIPS	□ CLEAR GLASS	26	2,43	12,2	3,2	23	6,7-7,6	8300-020-201
17"/45CM	A 41 EAM 01 X 01	PHILIPS	□ TINTED GLASS	26	2,43	12,2	3,2	23	6,7-76	8300-020-202
17"/45CM	A 41 JAR 00 X 01(M)	TOSHIBA	□ CLEAR GLASS	28	2,5	14,7	3,2	22	6,7-7,4	8300-020-201
17"/45CM	A 41 JAR 40 X 02(MW)	TOSHIBA	□ TINTED GLASS	28	2,5	14,7	3,2	22	6,7-7,4	8300-020-202
19"/50CM	A 46 JAR 00 X 01(M)	TOSHIBA	□ CLEAR GLASS	28	2,2	14,7	2,6	25	7,6-8,4	8300-020-308
19"/50CM	A 46 JAR 40 X 01(W)	TOSHIBA	□ TINTED GLASS	28	2,2	14,7	2,6	25	7,6-8,4	8300-020-312
19"/50CM	A 46 JSF 01 X 03	HITACHI	□ CLEAR GLASS	28	2,2	13,8	3	25	7,8-8,8	8300-020-308
19"/50CM	A 46 JSF 61 X 03	HITACHI	□ TINTED GLASS	28	2,2	13,8	3	25	7,8-8,8	8300-020-312
20"/51CM	A 48 EAC 00 X 01	PHILIPS	○ CLEAR GLASS	27,5	2,5	11,8	3,3	25	7,3-8,3	8300-020-310
20"/51CM	A 48 EAC 02 X 01	PHILIPS	○ TINTED GLASS	27,5	2,5	11,8	3,3	25	7,3-8,3	8300-020-311
20"/51CM	510 YXB 22-TC02(SY)	TOSHIBA	○ CLEAR GLASS	28	2,14	14,7	2,7	25	7,6-8,4	8300-030-351
20"/51CM	A 48 JAN 43 X 01(W)	TOSHIBA	○ TINTED GLASS	28	2,14	14,7	2,7	25	7,6-8,4	8300-020.311
20"/51CM	510 ABWB 22-TC02	HITACHI	○ CLEAR GLASS	28,7	2,4	13,8	3,2	25	7,7-8,5	8300-030-351
20"/51CM	A 48 JLL 90 X 01	ORION	○ TINTED GLASS	28	2,14	14,7	2,15	25	7,3-8,3	
21"/55CM	A 51 JAR 00 X 03(M)	TOSHIBA	□ CLEAR GLASS	28	2,11	14,7	2,6	25	7,6-8,4	8300-020-535
21"/55CM	A 51 JAR 43 X 01(MW)	TOSHIBA	□ TINTED GLASS	28	2,11	14,7	2,6	25	7,6-8,4	8300-020-536
21"/55CM	A 51 JSX 01 X 03	HITACHI	□ CLEAR GLASS	28	2,2	13,8	3	25	7,8-8,8	8300-020-535
21"/55CM	A 51 JSX 61 X 03	HITACHI	□ TINTED GLASS	28	2,2	13,8	3	25	7,8-8,8	8300-020-536



ZF-VERSTAERKER 29504-162.67

IF AMPLIFIER
AMPLI FI
AMPLIFICATORE FI

EURO-AV AUDIO
EURO-AV VIDEO
U/ VO
ZF
ZF
+UB 12V
+UB 12V
+UB NORM
+UB NORM
+UB I/III
+UB UHF
FBAS/SYNC
REF

F2250 07202-630
R2251 1K5
C2252 330P
C2253 10P
R2203 680
T2201 BF414
L2201
R2202 4K7
R2201 10K
C2201 1N
C2203 8P2
D2207 BB329
D2206 BB329
R2206 100K
F2206 07202-381
C2206 8P2
D2209 BB329
D2208 BB329
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C2208 8P2
D2212 BB329
D2211 BB329
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C2251 4N7
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L2246 15UH
R2244 1K
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D2245 10V
C2244 U1
L2248 15UH
C2246 10U 50V
L2249 15UH
C2247 10U 16V
C2249 100U 25V
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C2210 U1
R2217 2K2
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C2212 10P
C2214 7-35P
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R9203 220K
D9202 TD129
R9202 33K
C9201 U1
D9206 TD129
R9208 22K
D9208 TD129
D9207 TD129
R9211 33K
R2256 100K
D9209 TD129
R9213 33K
R9212 22K
C2209 U1
D9211 TD129
R9217 47K
R9216 56K
D9212 TD129
R9218 499K
D9216 TD129
R9226 1M
R9224 120K
D9213 TD129
R9221 33K
R9227 100K
D9214 TD129
R9223 220K
R9222 27K
R9228 4K7
D9218 TD129
D9217 TD129
R9229 36K
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C2258 4N7
IC 2220 TDA 4453-4
R2261 470
C2227 U1
R2234 10K
F2214 07202-688
C2211 68P
R2212 1K5
IC2215 TDA 4480
NORM
F2213 SFE5.5MC
R2213 560
C2218 10U/50V
R2289 56K
R2291 100K
R2292 1M
C2291 2U2
C2286 4U7
C2287 4U7
R2222 10K
R2286 100K
C2223 22U/25V
R2210 1K5
R2209 560
F2209 SFE5.74MC
F2215 07202-604
T2215 BF414
R2216 3K3
R2215 10K
R2218 6K8
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C2221 27P
F2216 19202-566
D2216 BB409
F2210 07202-688
C2207 56P
T2217 BC558
D2217 5V6
R2224 1K
C2219 U1
R2226 82K
R2267 6K8
R2262 2K7
F2260 07202-632
C2262 8P2
C2263 1N
R2266 100K
D2266 BB409
R2269 6K2
C2261 1N
C2226 U1
R2264 100K
IC 9240 MC 14556 (MOS)
DECODER
DECODER
R9247 100K
R9242 100K
R9241 470
R9243 100K
R9246 100K
R9248 100K
D9248 TD129
D9249 TD129
R9251 100K
D9253 TD129
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R9252 100K
T9258 BC558
R9258 47K
T9259 BC548
R9254 22K
T9260 BC548
R9262 2K2
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R9256 3K3
R9264 820
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R9276 33K
C9276 U1
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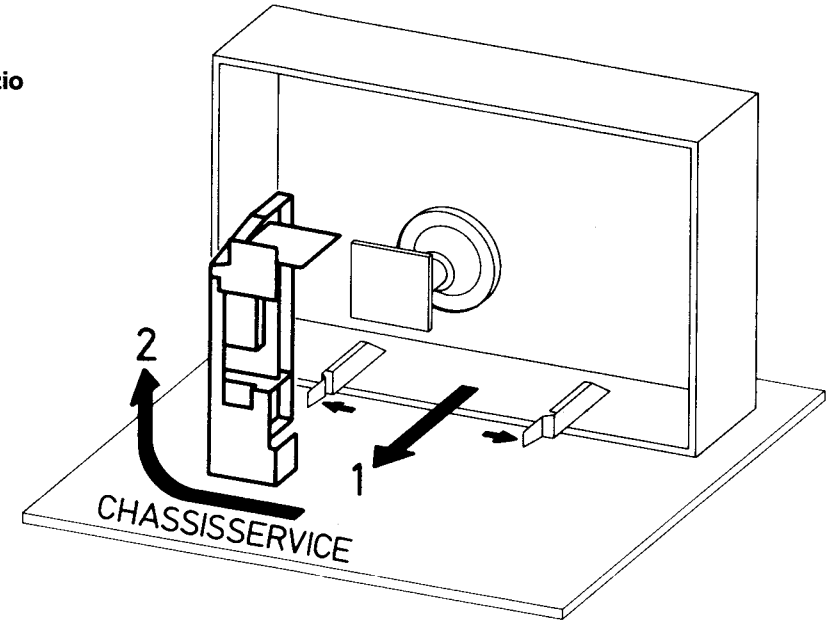
D9274 TD482
D9279 TD482
R9279 2K2
R9273 39K
R9271 39K
R9272 10K
C9271 2N2
C9278 U15
C9273 10U 50V
C9272 U1
R9278 1K2
C9279 10U/50V
R9280 15K
C9281 U22
D9281 TD041
R9282 1M

EURO-AV VIDEO
AUDIO
FBAS
SSC
VERT
LOGIC - DECODER
IC 2290 LM358
IC 2230 TDA8196
IC 2275 TEA2014
IC 9270 TDA2579
IC 2215 TDA 4480
IC 2220 TDA 4433-4
IC2280 CD4053 (MOS)

Servicestellung
Service position
Posizione di servizio



GRUNDIG

Ⓓ Btx * 32700 #

SERVICE MANUAL

CUC 3490

P 37 - 342 / 90	(9.25414 - 01)
T 55 - 340 / 90	(9.25436 - 01)
T 55 - 340 / 90	(9.25436 - 63)

Service Manual CUC 3490 Sach. - Nr. 72010 - 001.30
Service Manual CUC 3490 Order - No. 72010 - 001.30

(D)

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(GB)

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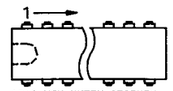
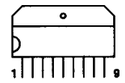
Symbole und ihre Bedeutung
Symbols and their meaning
Simboli e loro significati

P	PROGR.
P1	PROGR. TASTE PROGR. BUTTON TASTO PROGR. TOUCHE PROGR. PULS. PROGR.
M	SPEICHERTASTE MEMORY BUTTON TASTO DI MEMORIA TOUCHE MEMOIRE PULS. MEMORIA
NORM	NORMTASTE TV STANDARD SELECT. BUTTON COMMUT. DI NORMA TOUCHE DE NORME PULS. DE NORMA
▷▷+	FEINABST. + FINE TUNING + SINT. FINE + REGLAGE FIN + SINT. FINA +
-◁◁	FEINABST.- FINE TUNING - SINT. FINE - REGLAGE FIN - SINT. FINA -
I	SUCHLAUF BD I SELF-SEEK BAND I SINT. AUTOM. BANDA I RECHERCHE AUTOM. BANDE I SINT. AUTOM. BANDA-I
III	SUCHLAUF BANDWAHL III SELF-SEEK BAND III SINT. AUTOM. BANDA III RECHERCHE AUTOM. BANDE III SINT. AUTOM. BANDA-III
UHF	SUCHLAUF UHF SELF-SEEK UHF SINT. AUTOM. UHF RECHERCHE AUTOM. UHF SINT. AUTOM. UHF
	LAUTSTAERKE VOLUME VOLUME SONORE VOLUMEN
FT	FEINABST. FINE TUNING SINT. FINE REGLAGE FIN SINT. FINA
C	KANALWAHL CHANNEL SEL. SELEZ. CANALE SELECT. DE CANAUX SELECCION CANAL
	BALANCE BILANCIAM. BALANCE BALANCE
	SUCHLAUF SELF-SEEK SINT. AUTOM. RECHERCHE AUTOM. SINTONIA AUTOMATICA
U I/III	SCHALTSP. BANDWAHL BAND SEL. SWITCHING VOLTAGE TENS. DI COMMUT. SELEZ. BANDA TENS. DE COMMUT. SELECT. BANDE TENS. COMMUT. SELEC. BANDA
U VHF	SCHALTSP. VHF SWITCHING VOLT. VHF TENS. DI COMMUT. VHF TENS. DE COMMUT. VHF TENS. COMMUT. VHF
U UHF	SCHALTSP. UHF SWITCHING VOLT. UHF TENS. DI COMMUT. UHF TENS. DE COMMUT. UHF TENS. COMMUT. UHF
U AFC	SCHALTSP. AFC SWITCHING VOLT. AFC TENS. DI COMMUT. AFC TENS. DE COMMUT. AFC TENS. COMMUT. CAF
U AV	SCHALTSP. AV AV SWITCHING VOLT. TENS. DI COMMUT. AV TENS. DE COMMUT. AV TENS. COMMUT. AV
U NORM	SCHALTSP. NORM SWITCHING VOLT. STANDARD TENS. DI COMMUT. NORMA TENS. DE COMMUT. STANDARD TENS. COMMUT. NORMA
U COIN. 50/60HZ	SCHALTSP. KOINZ. SWITCHING VOLT. COINC. TENS. DI COMMUT. COINC. TENS. DE COMMUT. COINC. TENS. COMMUT. COINCIDENCIA
U EURO-AV	SCHALTSP. EURO-AV SWITCHING VOLT. EURO-AV TENS. DI COMMUT. EURO-AV TENS. DE COMMUT. NORME FR TENS. COMMUT. EURO-AV
U VQ	SCHALTSP. VIDEO QUELLE SWITCHING VOLT. VIDEO SOURCE TENS. DI COMMUT. SORG. VIDEO TENS. DE COMMUT. SOURCE VIDEO TENS. COMMUT. VIDEO
U DATA	SCHALTSP. DATENBETR. SWITCHING VOLT. DATA MODE TENS. DI COMMUT. DATI TENS. DE COMMUT. FONCT. DONNEES TENS. COMMUT. DATOS
U 4,5MHZ	SCHALTSP. 4,5 MHZ SWITCHING VOLT. 4,5 MHZ TENS. DI COMMUT. 4,5 MHZ TENS. DE COMMUT. 4,5 MHZ TENS. COMMUT. 4,5MHZ
U τ	REGELSP. VERZOEGERT DELAYED CONTR. VOLTAGE TENS. DI CONTR. RITARD. TENS. DE REGUL. RETARDEE TENS. REGUL. RETARDADA
U TUN.	ABSTIMMSP. TUNER TUNING VOLT. TUNER TENS. DI SINTONIA TUNER TENS. D'ACCORD TUNER TENS. SINTONIA AL TUNER
U AFC	REGELSP. AFC AFC CONTROL VOLT. TENS. DI CONTR. AFC TENS. DE REGUL. AFC TENS. REGUL. CAF
U MUTE	STUMMSCHALTUNG MUTING SILENZIAMENTO SILENCIEUX MUTING
	TASTIMPULS GATING PULSE IMPULSO A CADENZA IMPULS. DE DECLENCHEMENT IMP. PUERTA
VERT.	VERT. TASTIMPULS VERT. GATING PULSE IMP. A CADENZA VERT. IMP. TRAME IMP. CUADRO
VERT.	VERT. PARABEL VERT. PARABOLA PARABOLA VERT. SIGNAL PARABOLIQUE SENAL PARABOL. VERT.
VERT.	VERT. SAEGEZAHN VERT. SAW TOOTH DENTE DI SEGA VERT. SIGNAL DENT DE SCIE DIENTE DE SIERRA VERT.
HOR.	HOR. ANSTEUERUNG HORIZ. DRIVE PILOTAGGIO ORIZZ. SYNCHR. LIGNES EXCITACION HORIZ.
REF.	REF. IMPULS REFERENCE PULSE IMP. DI RIFER. IMP. DE REFER. IMP. REFERENCIA HORIZ.
	SCHUTZSCHALTUNG CIRCUIT PROTECTION CIRCUITO DI PROTEZIONE CIRCUIT DE SECURITE CIRCUITO DE PROTECCION
	FARBTON TINT TINTA TEINTE TINTE
REF.	REF. LAUTSTAERKE VOLUME REF. VOLT. TENS. DI RIF. VOLUME TENS. DE REF. VOL. SONORE TENS. REF. VOLUMEN
	HELLIGKEIT BRIGHTNESS LUMINOSITA' LUMINOSITE BRILLO
	KONTRAST CONTRAST CONTRASTO CONTRASTE CONTRASTE
	FARBKONTRAST CONTRAST COLOUR CONTRASTO COLORE CONTRASTE COULEUR SATUR. COLOR
FBAS	FBAS-SIGNAL CCVS SIGNAL SEGNALE SVCC SIGNAL VIDEO COMPOSITE SENAL VIDEO COMPUESTA
SSC	SUPERSANDCASTLE
SB	STRAHLSTR. BEGR. BEAM CURRENT LIM. CORRENTE CATODICA MEDIA LIM. COUR. DE FAISCEAU CORRIENTE MEDIA DE HAZ
SSB	SPITZ. STRAHLSTR. BEGR. PEAK BEAM CURRENT LIMITING CORR. CATODICA DI PICCO LIM. DE FAISCEAU CRETE CORRIENTE PICO DE HAZ
R	ROT-SIGNAL RED SIGNAL SEGNALE ROSSO SIGNAL ROUGE SENAL ROJA
G	GRUEN-SIGNAL GREEN SIGNAL SEGNALE VERDE SIGNAL VERT SENAL VERDE
B	BLAU-SIGNAL BLUE SIGNAL SEGNALE BLU SIGNAL BLEU SENAL AZUL
Y	Y-SIGNAL SEGNALE Y SIGNAL Y SENAL Y
F	F-SIGNAL CHROMA SIGNAL SEGNALE F SIGNAL CHROMA SENAL CROMA
SW	SCHWARZWERT BLACK LEVEL LIVELLO DEL NERO NIVEAU DU NOIR NIVEL DE NEGRO
AUDIO	AUDIO-SIGNAL SEGNALE AUDIO SIGNAL AUDIO SENAL AUDIO
AUDIO-L	AUDIO SIGNAL LINKS AUDIO SIGNAL LEFT SEGNALE AUDIO SINISTRA SIGNAL AUDIO GAUCHE SENAL AUDIO IZQUIERDA
AUDIO-R	AUDIO SIGNAL RECHTS AUDIO SIGNAL RIGHT SEGNALE AUDIO DESTRA SIGNAL AUDIO DROIT SENAL AUDIO DERECHA
EURO-AV VIDEO	VIDEO SIGNAL EURO-AV SEGNALE VIDEO EURO-AV SIGNAL VIDEO NORME FR SENAL VIDEO EURO-AV
EURO-AV AUDIO-R	AUDIO SIGNAL EURO-AV RECHTS AUDIO SIGNAL EURO-AV RIGHT SEGNALE AUDIO EURO-AV DESTRA SIGNAL AUDIO NORME FR DROIT SENAL AUDIO DERECHA EURO-AV
EURO-AV AUDIO-L	AUDIO SIGNAL EURO-AV LINKS AUDIO SIGNAL EURO-AV LEFT SEGNALE VIDEO EURO-AV SINISTRA SIGNAL AUDIO NORME FR GAUCHE SENAL AUDIO IZQUIERDA EURO-AV
IR	IR-SIGNAL SEGNALE IR SIGNAL IR SENAL IR
U G1	SPG. GITTER 1 VOLTAGE GRID 1 TENS. GRIGLIA 1 TENS. GRILLE G1 TENS. REJILLAS G-1
U FOC.	FOKUSSP. FOCUSSING VOLTAGE TENS. DI FOCALIZZ. TENS. DE FOCALIS. TENS. FOCALIZACION
U H	HOCHSPANNUNG EHT VOLTAGE ALTA TENS. HAUTE TENS. MAT
U SG	SCHIRMGITTERSP. SCREEN-GRID VOLT. TENS. GRIGLIA SCHERMO TENS. GRILLE-ECRAN TENS. ACELERADORES
TE	TEXT ENABLE
SCL	I²C-CLOCK I²C-BUS
VCL	VCR-CLOCK
ICL	I-BUS-CLOCK
SDA	DATEN DATA DATI DONNEES DATA
ZF	ZF-SIGNAL IF SIGNAL SEGNALE FI SIGNAL FI SENAL DE FI
PP	PAL PRIORITAET PAL PRIORITY PRIORITA' PAL PRIORITE PAL PRIORIDAD PAL
F-DIR.	F-SIGNAL DIREKT F SIGNAL DIRECT SEGNALE F DIRETTO SIGNAL CHROMA DIRECT SENAL CROMA DIRECTA
F V	FV-SIGNAL FV SIGNAL SEGNALE FV SIGNAL FY SENAL FV
F U	FU-SIGNAL FU SIGNAL SEGNALE FU SIGNAL FX SENAL FU
F-VERZ	F-SIGNAL VERZOEGERT F SIGNAL DELAYED SEGNALE F RITARD. SIGNAL CHROMA RETARDE SENAL CROMA RETARDADA
DL	VERZOEGERUNGSLEITUNG DELAY LINE LINEA DI RITARDO LIGNE A RETARD LINEA DE RETARDO
U SCHUTZ	SCHALTSP./SCHUTZFUNKTION SWITCHING VOLT. /PROTECTIVE FUNC. TENS. DI COMMUT. /FUNZ.DI PROTEZ. TENS. DE COMMUT. / SECURITE TENS. CONMUT./PROTECCION
FBAS SYNC.	FBAS/SYNC.-SIGNAL CCVS/SYNC. SIGNAL SEGNALE SINCR. /VIDEO COL. COMP. SIGNAL SYNC./VIDEO COMPOSITE SENAL SINCR./VIDEO COMPUESTA
SYNC.	SYNC.-SIGNAL SYNC. SIGNAL SEGNALE SINCR. SIGNAL SYNC. SENAL DE SINCRONISMOS
U 50/60 HZ	SCHALTSP. 50/60HZ SWITCHING VOLT.50/60HZ TENS. DI COMMUT. 50/60HZ TENS. DE COMMUT. 50/60HZ TENS. CONMUT. 50/60HZ
U BTX	SCHALTSP. BTX SWITCHING VOLT. BTX (VIEWDATA) TENS. COMMUT. VIDEOTEL TENS. COMMUT. VIDEOTEXTE TENS. CONMUT. VIDEOTEXTO
SYNC. VT	SYNC. VT SYNC. VT (TELETEXT) SINCR. TELEVIDEO SYNC. TELETEXTE SINCR. TELETEXTO
SYNC. BTX	SYNC. BTX SYNC. BTX (VIEWDATA) SINCR. VIDEOTEL SYNC. VIDEOTEXTE SINCR. VIDEOTEXTO
U RESET	SCHALTSP. RESET SWITCHING VOLT. RESET TENS. COMMUT.,RESET TENS. CONMUT. RESET
U STAND BY	SCHALTSP. STAND BY SWITCHING VOLT. STAND BY TENS. COMMUT. STAND BY TENS. COMMUT.,VEILLE TENS. CONMUT. STAND BY
U HUB	SCHALTSP. HUB SWITCHING VOLT. DEVIATION TENS. COMMUT. DEVIAZIONE TENS. COMMUT.,DEVIATION TENS. CONMUT. DESVIACION
U DEEM	SCHALTSP. DEEM SWITCHING VOLT. DEEMPHASIS TENS. COMMUT. DEENFASI TENS. COMMUT.,DESACCENT. TENS. CONMUT. DEENFASIS
U CAM. AV	SCHALTSP. KAMERA WIEDERG. SWITCHING VOLT. CAMERA PLAYBACK TENS. COMMUT. RIPRODUZ. TELECAM. TENS. COMMUT. REPROD. CAMERA TENS. CONMUT. REPROD. CAMARA
U LED	SCHALTSP. LED LED SWITCHING VOLT. LED TENS. DI COMMUT. TENS. DE COMMUT. LED TENS. CONMUT. LED
	ZEILENBREITE LINE WIDTH LARGHEZZA DI RIGA AMPLITUDE HORIZONTALE AMPLITUD HORIZONTAL
	OST / WEST AMPLITUDE EAST / WEST AMPLITUDE AMPIEZZA EST / OVEST AMPLITUDE EST / OUEST AMPLITUD E/O
	HOR. LINEARITAET HORIZ. LINEARITY LINEAR. ORIZZ. LINEAR. HORIZONT. LINEAL. HORIZONTAL
	BILDLAGE HOR. HORIZ. PICTURE POSITION POSIZIONE ORIZZ. D'IMMAGINE CADRAGE HORIZONT. CENTRADO HORIZONTAL
	FOKUSREGLER FOCUS CONTROL REGOLAT. DI FOCALIZZ. REGLAGE DE FOCALISATION CONTROL DE FOCO
	BILDLAGE VERT. VERT. PICTURE POSITION POSIZ. VERT. D'IMMAGINE CADRAGE VERTICAL CENTRADO VERTICAL
	BILDAMPLITUDE FIELD AMPLITUDE AMPIEZZA D'IMMAGINE AMPLITUDE VERTICALE AMPLITUD VERTICAL
	TRAPEZ TRAPEZIUM TRAPEZIO TRAPEZE TRAPECIO
	HOR. FREQUENZ HOR. FREQUENCY FREQ. ORIZZ. FREQ. HORIZ. FRECUENCIA HORIZONTAL
	VERT. FREQUENZ VERT. FREQUENCY FREQ. VERT. FRECUENCIA VERTICAL
	VERT. LINEARITAET VERT. LINEARITY LINEAR. VERT. LINEAR. VERT. LINEALIDAD VERTICAL
	OST/WEST SYMMETRIE EAST/WEST SYMMETRY SIMMETRIA EST/OVEST SYMMETRIE EST/OUEST SIMETRIA E/O

Wichtige Schaltzeichen
Important circuit simbols
Segni circuitali importanti



IC'S VON UNTEN GESEHEN
IC'S SEEN FROM BOTTOM
IC'S VISTI DI SOTTO
IC'S VUS DU DESSOUS



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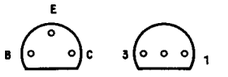
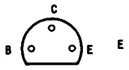
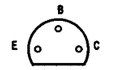


BF 199

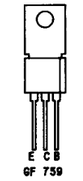
78 L05 CP



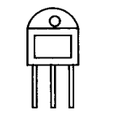
BF 421 / BF 422
BC 637 / BF 423



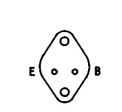
BC 548 / BC 558
BC 337/25
PN 2222
BC 338 / BC 324
BF 414
BC 308 / BC 248
BC 547



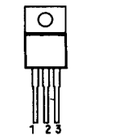
BF 759



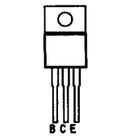
BU 508A / BU 903
BU 508D / BU 908



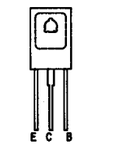
BU 208A
BU 546



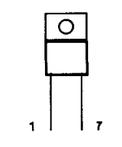
TY 40164 / MC 7505
MC78 M05 CT
7812



BD 561G
BU 908
BU 903
S 668T
BUT 11A
BUT 56A



BD 561 G
BD 139



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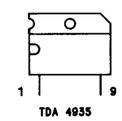

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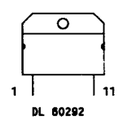
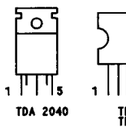
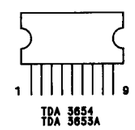


DL 60292



TDA 2040



TDA 3654
TDA 3653A

SOT 143
G1 G2
S D

BF 994
BF 996

SOT 23
E B
C

BF 569
BF 579

BC

3/4W 0617 DIN
1/10W 0204 DIN
1/4W 0207 DIN
1/2W 0411 DIN
1W 0411 DIN
2W 0617 DIN
4W 0922 DIN

WIDERSTAND NICHT BRENNBAR
RESISTOR NOT FLAMMABLE
RESISTENZA NON INFIAMMABILE
RESISTANCE ININFLAMMABLE

DRAHTWIDERSTAND
WIRE RESISTOR
RESISTENZA A FILO
RESISTANCE BOBINEE

SICHERUNGSWIDERSTAND
SAFETY RESISTOR
RESISTENZA DI SICUREZZA
RESISTANCE DISJONCTABLE

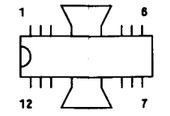
KONDENSATOR
CAPACITOR
CONDENSATORE
CONDENSATEUR
250V~
400V~
630V~
1000V~

FOLIE
FOIL
A FOGLIA
FOLIO PLASTIQUE

KERAMIK
CERAMIC
CERAMICA
CERAMIQUE

ELKO
ELECTROLYTIC
ELETTROLITICO
ELECTROLYTIQUE

TDA 2653A



TDA 2655B

HLSTR. BEGR.
URRENT LIMITING
ICA DI PICCO
SCEAU CRETE
ICO DE HAZ

SSO
E

OE

AL
MA

NERO
DIR
GRO

IO
O

- LINKS
- LEFT
IO SINISTRA
O GAUCHE
IZQUIERDA

- RECHTS
- RIGHT
IO DESTRA
O DROIT
DERECHA

- EURO-AV
EO EURO-AV
O NORME FR
EURO-AV

- EURO-AV RECHTS
- EURO-AV RIGHT
IO EURO-AV DESTRA
O NORME FR DROIT
DERECHA EURO-AV

- EURO-AV LINKS
- EURO-AV LEFT
EO EURO-AV SINISTRA
O NORME FR GAUCHE
IZQUIERDA EURO-AV

1
O 1
IA 1
E G1
LAS G-1

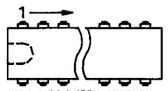
OLTAGE
CALIZZ.
CALIS.
IZACION

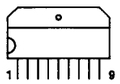
RSP.
VOLT.
A SCHERMO
-ECRAN
ADORES

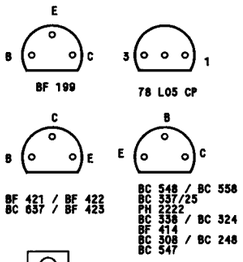
SDA	DATEN DATA DATI DONNEES DATA
ZF	ZF-SIGNAL IF SIGNAL SEGNALE FI SIGNAL FI SENAL DE FI
PP	PAL PRIORITAET PAL PRIORITY PRIORITA' PAL PRIORITE PAL PRIORIDAD PAL
F-DIR.	F-SIGNAL DIREKT F SIGNAL DIRECT SEGNALE F DIRETTO SIGNAL CHROMA DIRECT SENAL CROMA DIRECTA
F_V	FV-SIGNAL FV SIGNAL SEGNALE FV SIGNAL FY SENAL FV
F_U	FU-SIGNAL FU SIGNAL SEGNALE FU SIGNAL FX SENAL FU
F-VERZ	F-SIGNAL VERZOEGERT F SIGNAL DELAYED SEGNALE F RITARD. SIGNAL CHROMA RETARDE SENAL CROMA RETARDADA
DL	VERZOEGERUNGSLEITUNG DELAY LINE LINEA DI RITARDO LIGNE A RETARD LINEA DE RETARDO
U SCHUTZ	SCHALTSP./SCHUTZFUNKTION SWITCHING VOLT. /PROTECTIVE FUNC. TENS. DI COMMUT. /FUNZ.DI PROTEZ. TENS. DE COMMUT. / SECURITE TENS. CONMUT./PROTECCION
EBAS SYNC.	FBAS/SYNC.-SIGNAL CCVS/SYNC. SIGNAL SEGNALE SINCR. /VIDEO COL. COMP. SIGNAL SYNC./VIDEO COMPOSITE SENAL SINCR./VIDEO COMPUESTA
SYNC.	SYNC.-SIGNAL SYNC. SIGNAL SEGNALE SINCR. SIGNAL SYNC. SENAL DE SINCRONISMOS
U 50/60 HZ	SCHALTSP. 50/60HZ SWITCHING VOLT.50/60HZ TENS. DI COMMUT. 50/60HZ TENS. DE COMMUT. 50/60HZ TENS. CONMUT. 50/60HZ
U BTX	SCHALTSP. BTX SWITCHING VOLT. BTX (VIEWDATA) TENS. COMMUT. VIDEOTEL TENS. COMMUT. VIDEOTEXTE TENS. CONMUT. VIDEOTEXTO
SYNC. VT	SYNC. VT SYNC. VT (TELETEXT) SINCR. TELEVIDEO SYNC. TELETEXTE SINCR. TELETEXTO
SYNC. BTX	SYNC. BTX SYNC. BTX (VIEWDATA) SINCR. VIDEOTEL SYNC. VIDEOTEXTE SINCR. VIDEOTEXTO
U RESET	SCHALTSP. RESET SWITCHING VOLT. RESET TENS. COMMUT.,RESET TENS. CONMUT. RESET
U STAND BY	SCHALTSP. STAND BY SWITCHING VOLT. STAND BY TENS. COMMUT. STAND BY TENS. COMMUT.,VEILLE TENS. CONMUT. STAND BY
U HUB	SCHALTSP. HUB SWITCHING VOLT. DEVIATION TENS. COMMUT. DEVIAZIONE TENS. COMMUT.,DEVIATION TENS. CONMUT. DESVIACION
U DEEM	SCHALTSP. DEEM SWITCHING VOLT. DEEMPHASIS TENS. COMMUT. DEENFASI TENS. COMMUT.,DESACCENT. TENS. CONMUT. DEENFASIS
U CAM. AV	SCHALTSP. KAMERA WIEDERG. SWITCHING VOLT. CAMERA PLAYBACK TENS. COMMUT. RIPRODUZ. TELECAM. TENS. COMMUT. REPROD. CAMERA TENS. CONMUT. REPROD. CAMARA
U LED	SCHALTSP. LED LED SWITCHING VOLT. LED TENS. DI COMMUT. TENS. DE COMMUT. LED TENS. CONMUT. LED

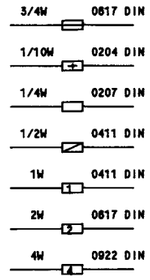
	ZEILENBREITE LINE WIDTH LARGHEZZA DI RIGA AMPLITUDE HORIZONTALE AMPLITUD HORIZONTAL
	OST / WEST AMPLITUDE EAST / WEST AMPLITUDE AMPIEZZA EST / OVEST AMPLITUDE EST / OUEST AMPLITUD E/O
	HOR. LINEARITAET HORIZ. LINEARITY LINEAR. ORIZZ. LINEAR. HORIZONT. LINEAL. HORIZONTAL
	BILDLAGE HOR. HORIZ. PICTURE POSITION POSIZIONE ORIZZ. D'IMMAGINE CADRAGE HORIZONT. CENTRADO HORIZONTAL
	FOKUSREGLER FOCUS CONTROL REGOLAT. DI FOCALIZZ. REGLAGE DE FOCALISATION CONTROL DE FOCO
	BILDLAGE VERT. VERT. PICTURE POSITION POSIZ. VERT. D'IMMAGINE CADRAGE VERTICAL CENTRADO VERTICAL
	BILDAMPLITUDE FIELD AMPLITUDE AMPIEZZA D'IMMAGINE AMPLITUDE VERTICALE AMPLITUD VERTICAL
	TRAPEZ TRAPEZIUM TRAPEZIO TRAPEZE TRAPECIO
	HOR. FREQUENZ HOR. FREQUENCY FREQ. ORIZZ. FREQ. HORIZ. FRECUENCIA HORIZONTAL
	VERT. FREQUENZ VERT. FREQUENCY FREQ. VERT. FRECUENCIA VERTICAL
	VERT. LINEARITAET VERT. LINEARITY LINEAR. VERT. LINEAR. VERT. LINEALIDAD VERTICAL
	OST/WEST SYMMETRIE EAST/WEST SYMMETRY SIMMETRIA EST/OVEST SYMMETRIE EST/OUEST SIMETRIA E/O

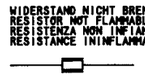
Wichtige Schaltzeichen
Important circuit simbols
Segni circuitali importanti

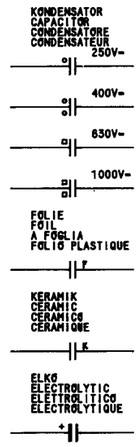


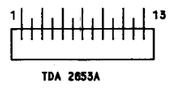


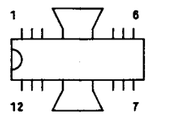


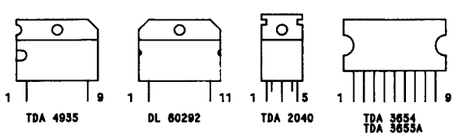


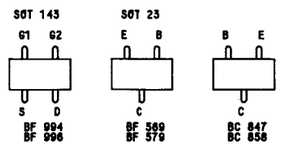












ACHTUNG: (D) **BEI EINGRIFFEN INS GERÄT SIND DIE SICHERHEITSVORSCHRIFTEN NACH VDE701(REPARATURBEZOGEN) BZW.VDE0860/IEC65 (GERÄTEBEZOGEN) ZU BEACHTEN.**

⚠ IM REPARATURFALL DÜRFEN NUR ORIGINALBAUTEILE VERWENDET WERDEN !

ACHTUNG! (D) VORSCHRIFTEN BEIM UMGANG MIT MOS-BAUTEILEN BEACHTEN !

ATTENTION: (GB) **PLEASE OBSERVE THE APPLICABLE SAFETY REQUIREMENTS ACCORDING TO VDE 701 (CONCERNING REPAIRS) AND VDE 0860/IEC 65 (CONCERNING TYPE OF PRODUCT).**

⚠ ONLY USE COMPONENTS WITH THE SAME SPECIFICATION FOR REPLACEMENT !

ATTENTION! (GB) OBSERVE MOS COMPONENTS HANDLING INSTRUCTIONS WHEN SERVICING !

ATTENTION: (F) **PRIERE D'OBSERVER LES PRESCRIPTIONS DE SECURITE VDE 701 (CONCERNANT LES REPARATIONS) ET VDE 0860/IEC 65 (CONCERNANT LE TYPE DE PRODUIT).**

⚠ EN CAS DE REMPLACEMENT N'UTILISER QUE DES COMPOSANTS DES MEMES SPECIFICATIONS !

ATTENTION! (F) LORS DE LA MANIPULATION DES CIRCUITS MOS , RESPECTER LES PESCRIPTIONS MOS !

ATTENZIONE: (I) **OSSERVARNE LE CORRISPONDENTI PRESCRIZIONI DI SICUREZZA VDE 701 (CONCERNENTE SERVIZIO) E VDE 0860/IEC 65 (CONCERNENTE IL TIPO DI PRODOTTO).**

⚠ IN CASO DI SOSTITUZIONE IMPIEGARE SOLO COMPONENTI CON LE STESSE CARATTERISTICHE !

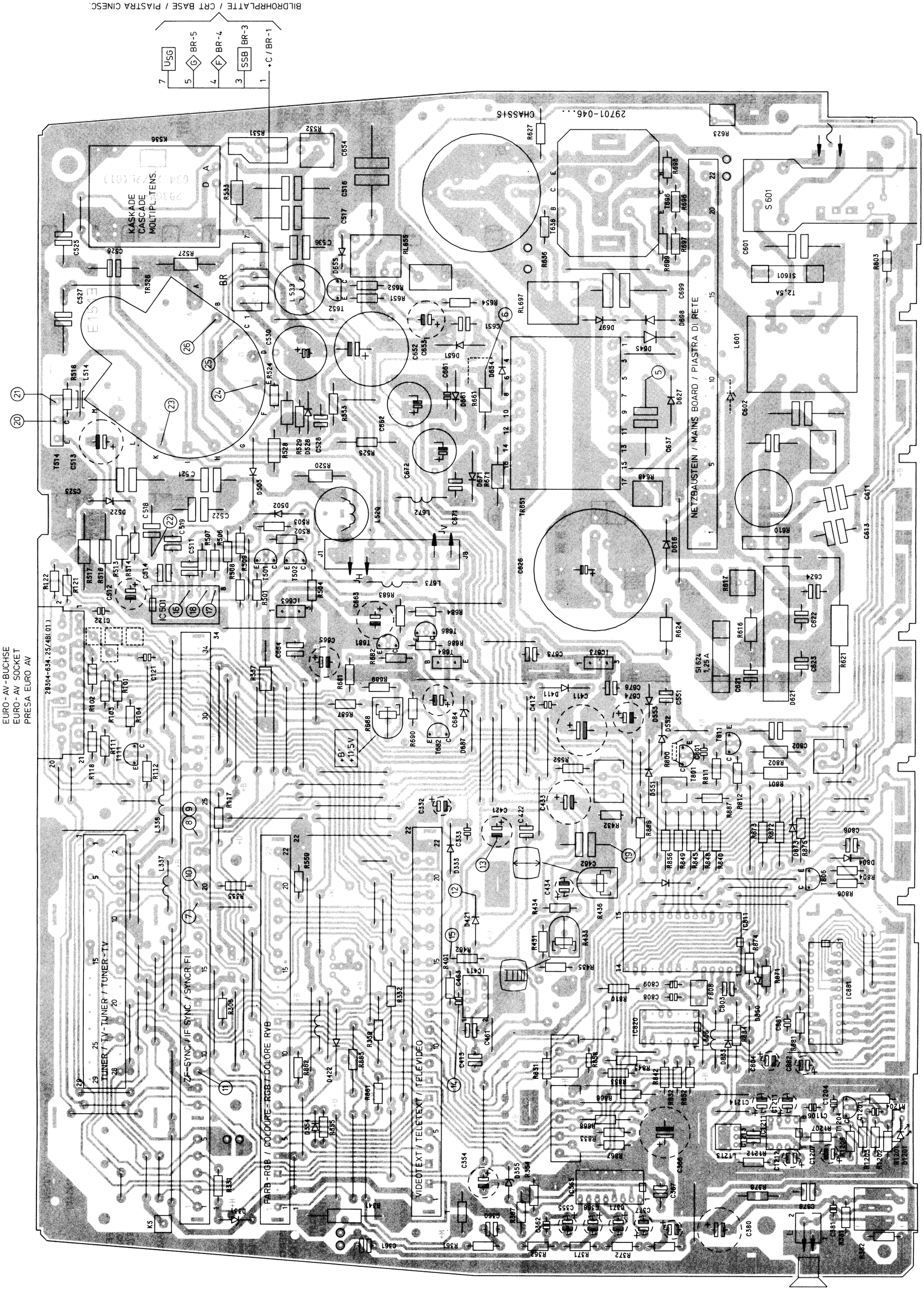
ATTENZIONE! (I) OSSERVARE LE RELATIVE PRESCRIZIONI DURANTE, LAVORI CON COMPONENTI MOS !

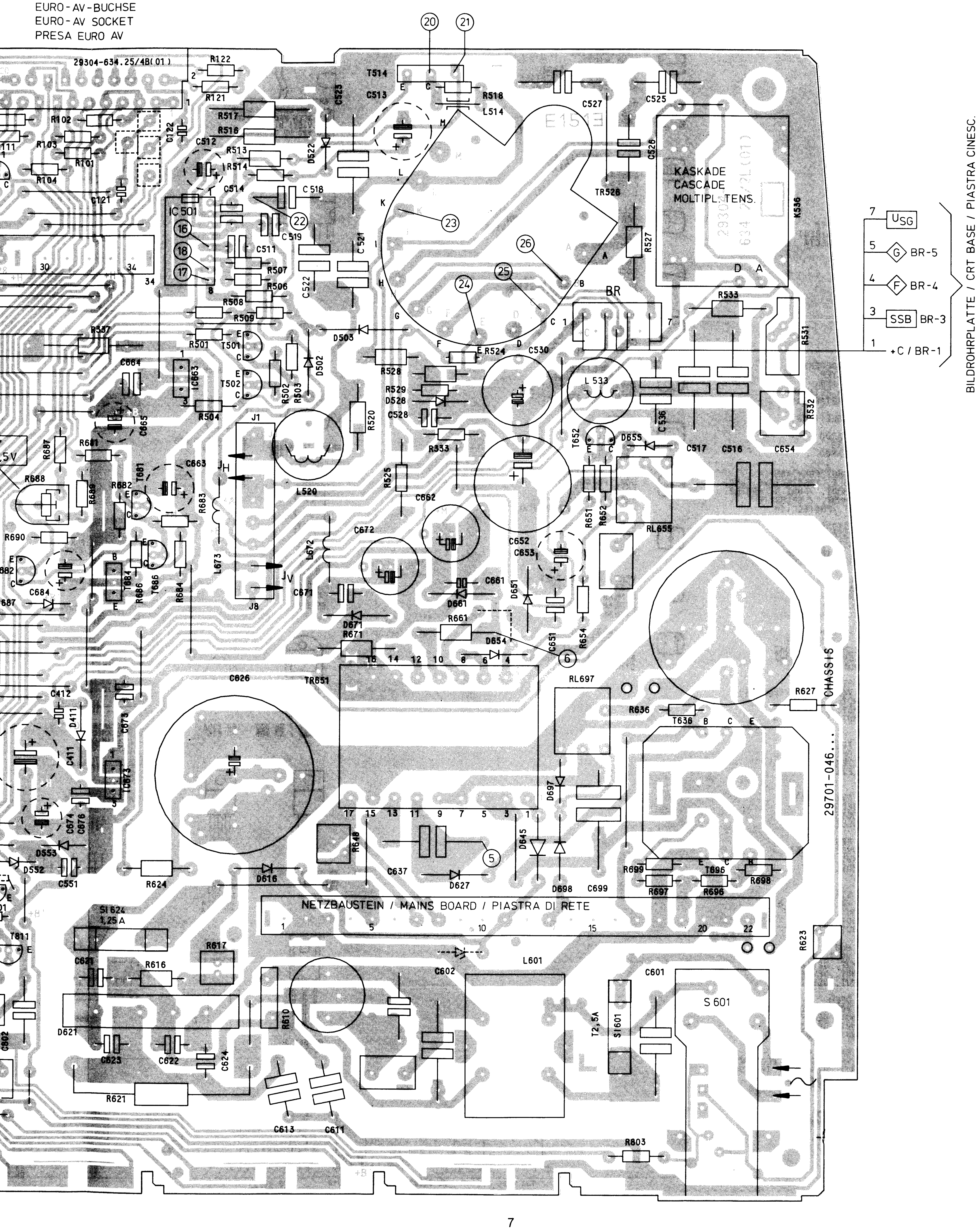
ATENCION: (E) **RECOMENDAMOS LAS NORMAS DE SEGURIDAD VDE U OTRAS NORMAS EQUIVALENTES. POR EJEMPLO : VDE 701 PARA REPARACIONES, VDE 0860/IEC 65 PARA APARATOS.**

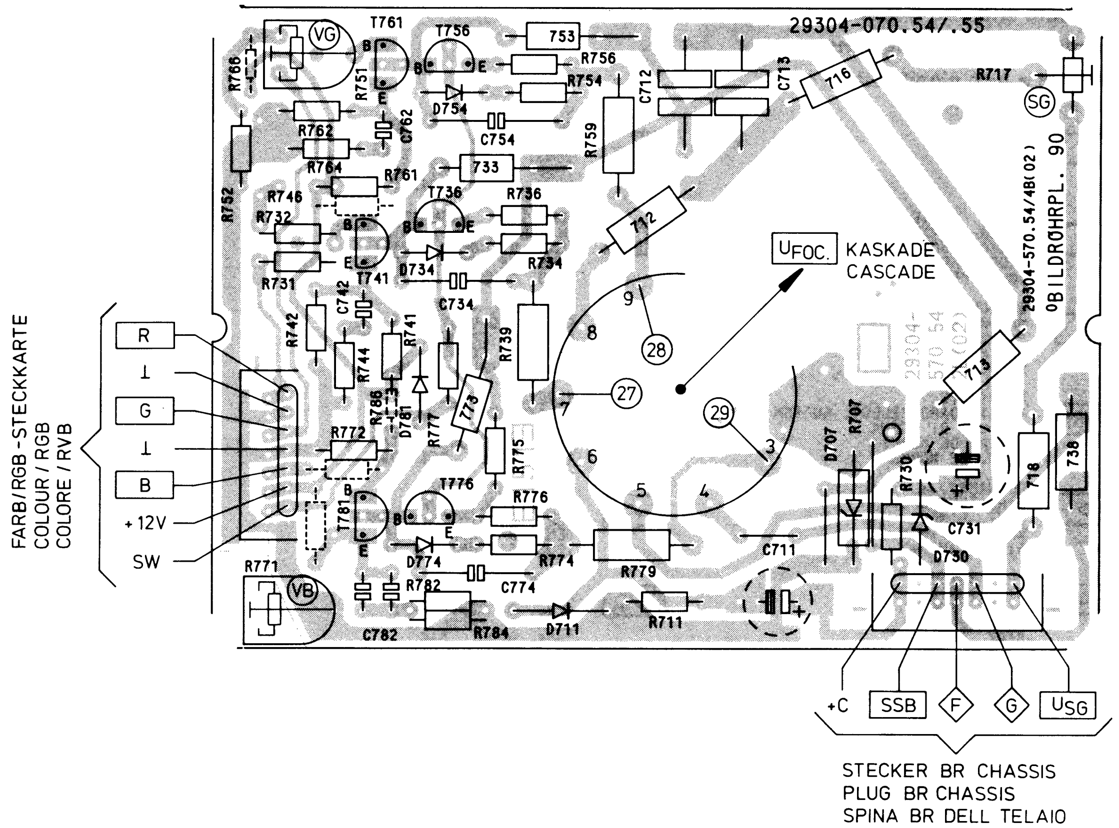
⚠ EN CASO DE REPARACION UTILIZAR UNICAMENTE REPUESTOS ORIGINALES.

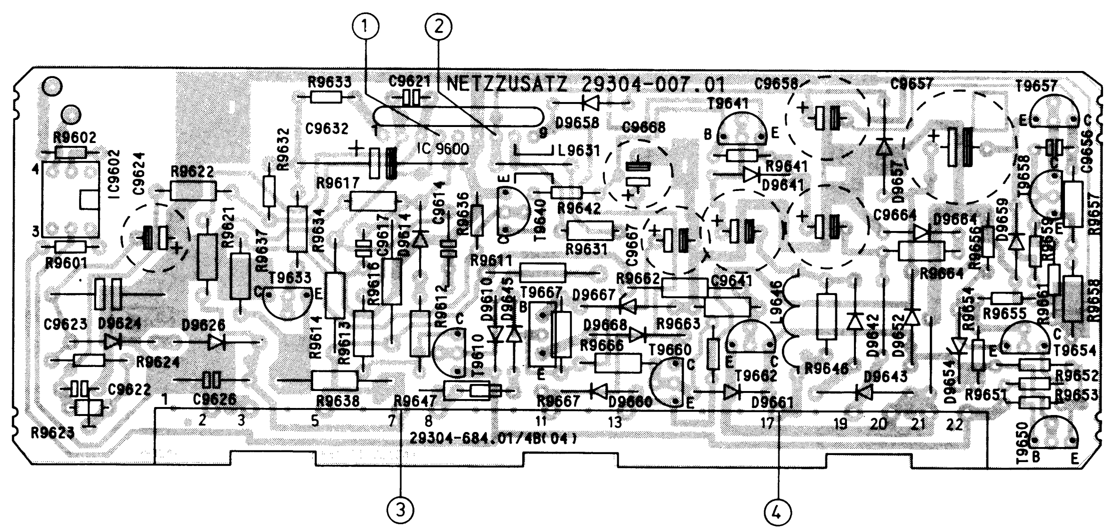
ATENCION! (E) DURANTE LA REPARACION OBSERVAR LAS NORMAS SOBRE COMPONENTES MOS !

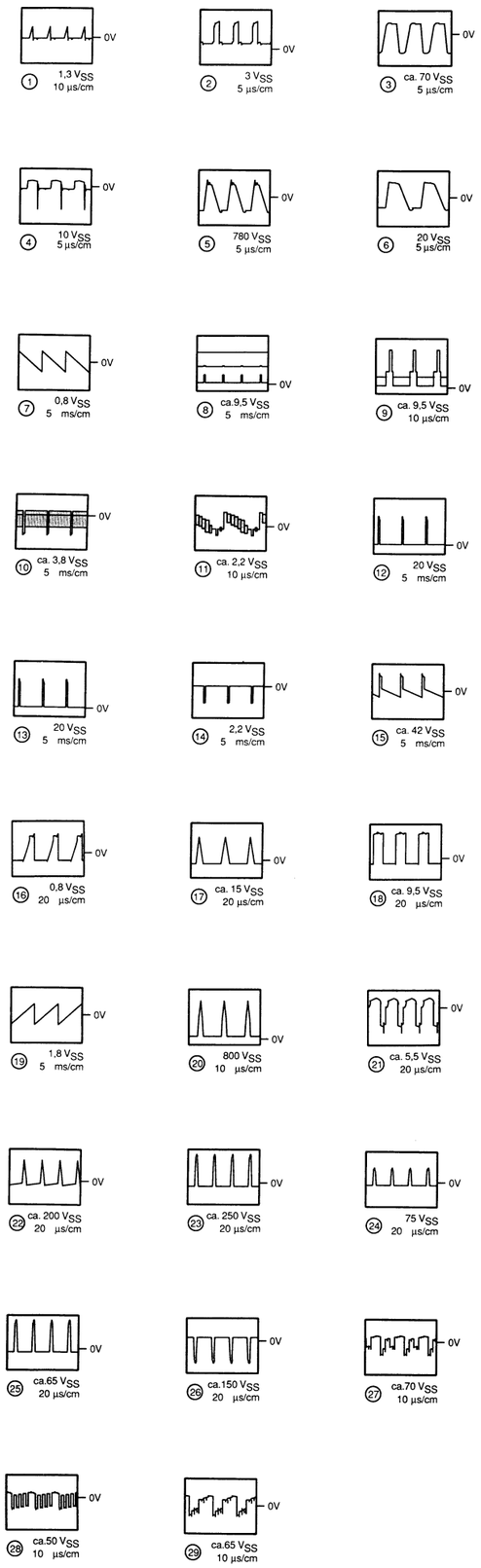
EURO-AV-BUCHSE
EURO-AV SOCKET
PRESA EURO AV

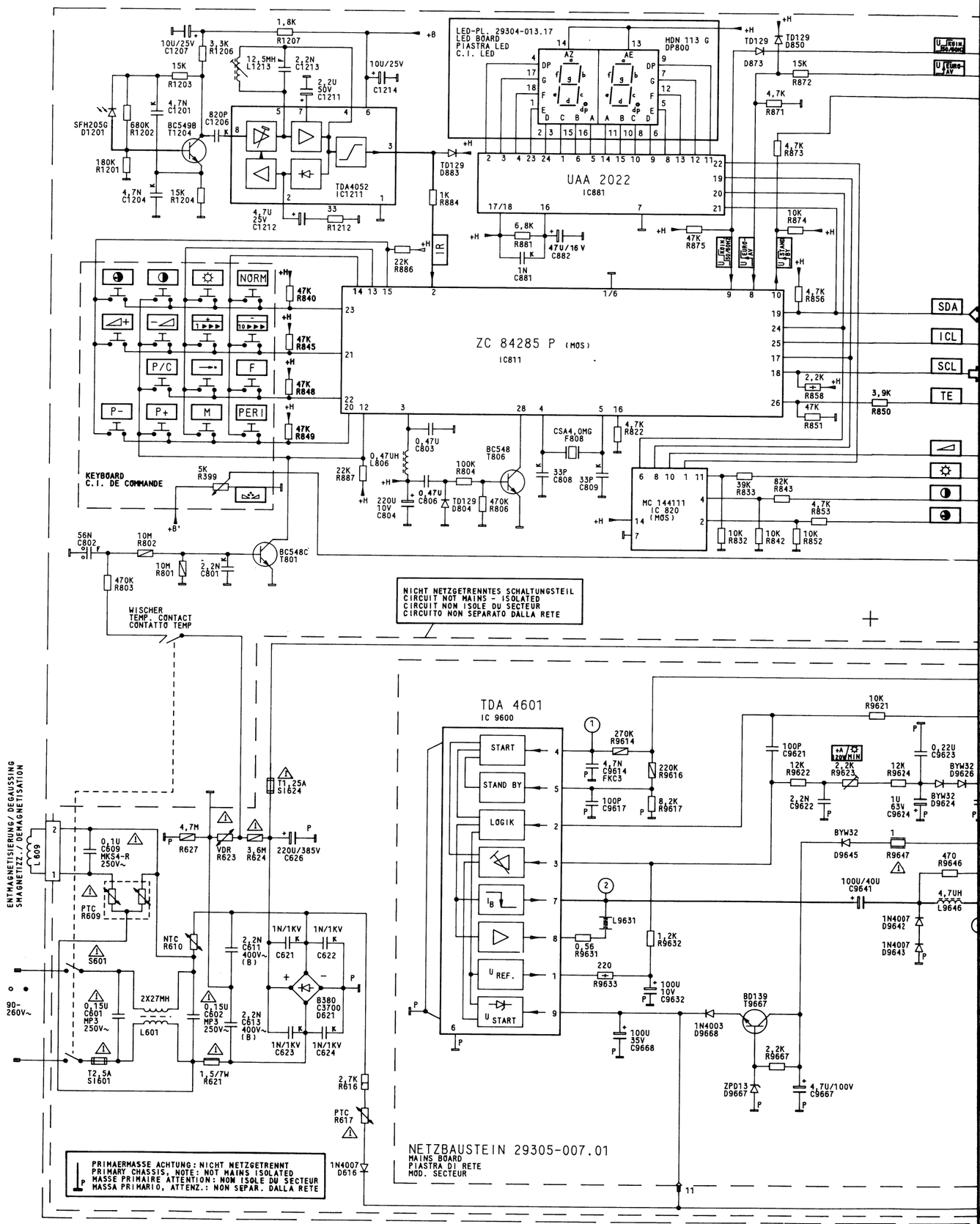


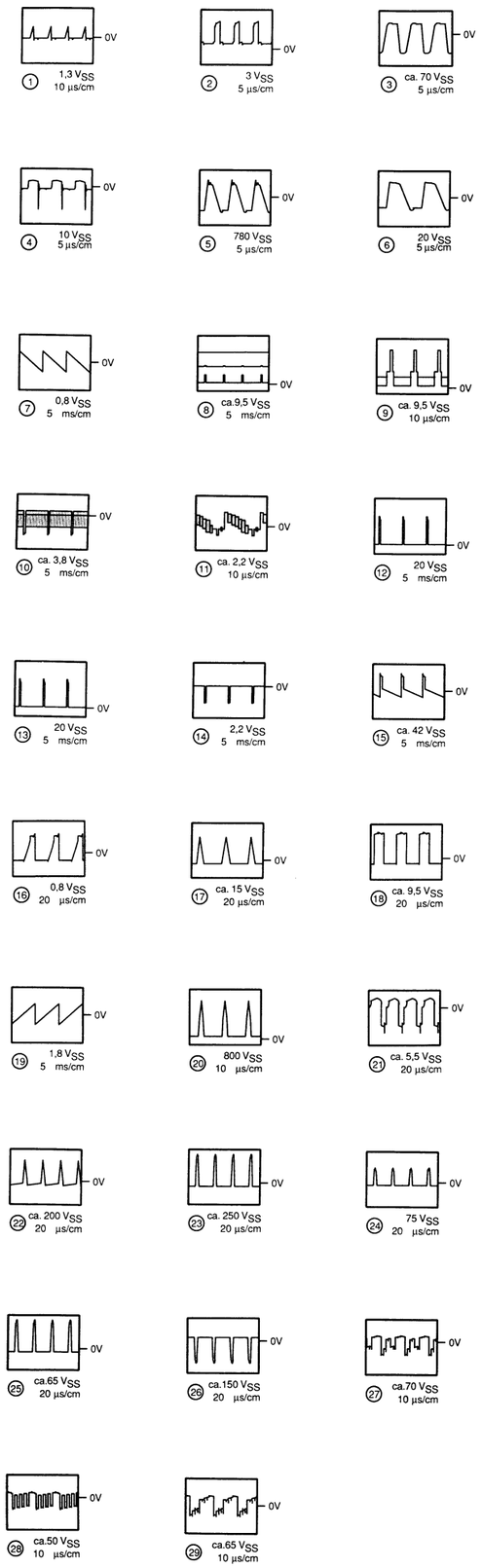

EURO-AV-BUCHSE
EURO-AV SOCKET
PRESA EURO AV
29304-634.25/4B(01)
KASKADE
CASCADE
MOLTIPL. TENS.
BR
7 USG
5 G BR-5
4 F BR-4
3 SSB BR-3
1 +C / BR-1
BILDROHRPLATTE / CRT BASE / PIASTRA CINESC.
NETZBAUSTEIN / MAINS BOARD / PIASTRA DI RETE
CHASSIS
29701-046...
S 601
SI 624 1,25 A
T2,5A
SI601

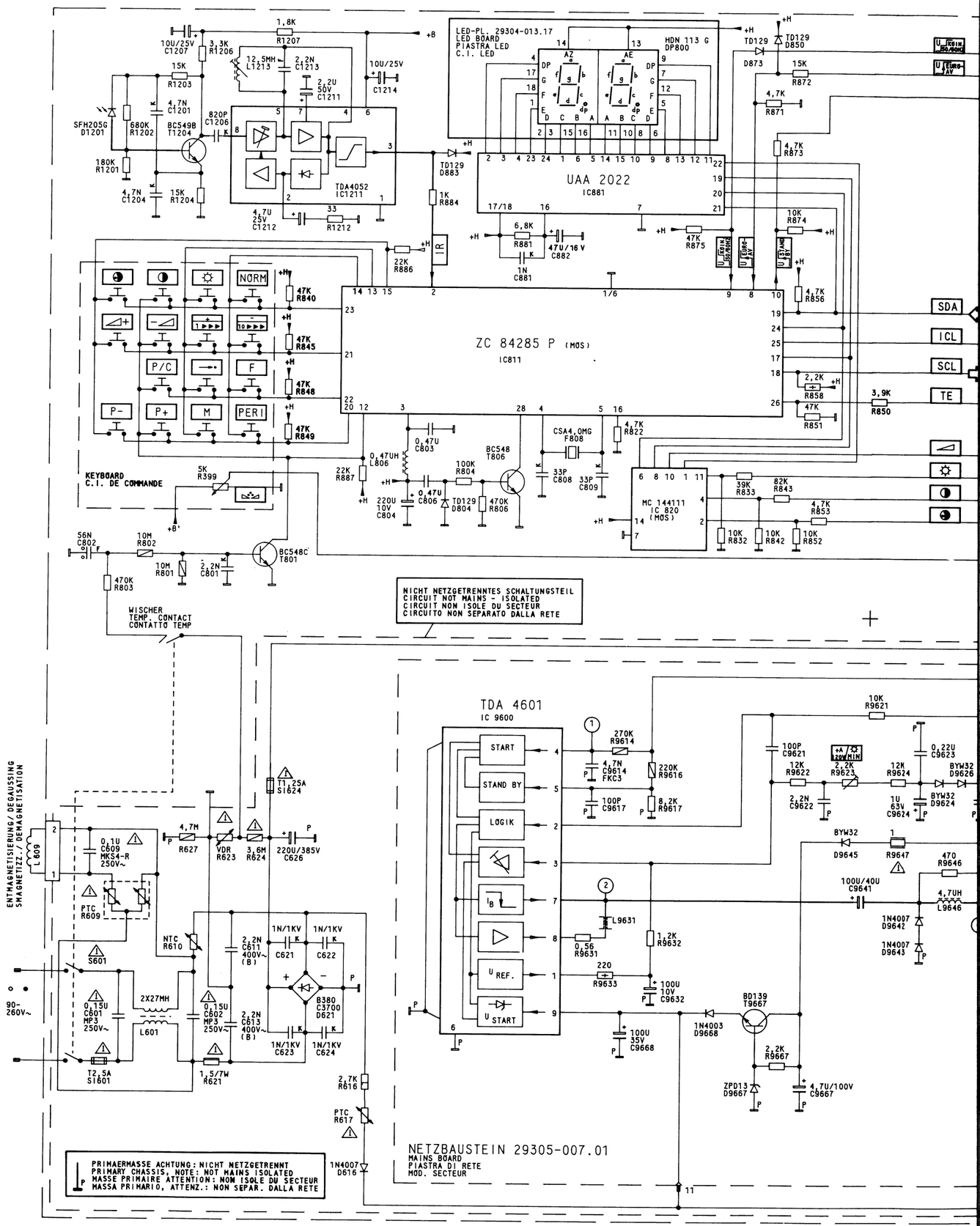

29304-070.54/.55
FARB/RGB-STECKKARTE
COLOUR / RGB
COLORE / RVB
R
G
B
+12V
SW
UFOC. KASKADE
CASCADE
29304-570.54/4B(02)
0BILDROHRPL. 90
+C
SSB
F
G
USG
STECKER BR CHASSIS
PLUG BR CHASSIS
SPINA BR DELL TELAIO


NETZZUSATZ 29304-007.01
IC 9600
29304-684.01/4B(04)


0V
1 1,3 VSS 10 µs/cm
2 3 VSS 5 µs/cm
3 ca. 70 VSS 5 µs/cm
4 10 VSS 5 µs/cm
5 780 VSS 5 µs/cm
6 20 VSS 5 µs/cm
7 0,8 VSS 5 ms/cm
8 ca.9,5 VSS 5 ms/cm
9 ca. 9,5 VSS 10 µs/cm
10 ca. 3,8 VSS 5 ms/cm
11 ca. 2,2 VSS 10 µs/cm
12 20 VSS 5 ms/cm
13 20 VSS 5 ms/cm
14 2,2 VSS 5 ms/cm
15 ca. 42 VSS 5 ms/cm
16 0,8 VSS 20 µs/cm
17 ca. 15 VSS 20 µs/cm
18 ca. 9,5 VSS 20 µs/cm
19 1,8 VSS 5 ms/cm
20 800 VSS 10 µs/cm
21 ca. 5,5 VSS 20 µs/cm
22 ca. 200 VSS 20 µs/cm
23 ca. 250 VSS 20 µs/cm
24 75 VSS 20 µs/cm
25 ca.65 VSS 20 µs/cm
26 ca.150 VSS 20 µs/cm
27 ca.70 VSS 10 µs/cm
28 ca.50 VSS 10 µs/cm
29 ca.65 VSS 10 µs/cm


LED-PL. 29304-013.17
LED BOARD
PIASTRA LED
C.I. LED
HDN 113 G
DP800
UAA 2022
IC881
ZC 84285 P (MOS)
IC811
KEYBOARD
C.I. DE COMMANDE
MC 144111
(IC 820
(MOS)
NICHT NETZGETRENNTES SCHALTUNGSTEIL
CIRCUIT NOT MAINS - ISOLATED
CIRCUIT NON ISOLE DU SECTEUR
CIRCUITO NON SEPARATO DALLA RETE
WISCHER
TEMP. CONTACT
CONTATTO TEMP
SDA
ICL
SCL
TE
TDA 4601
IC 9600
START
STAND BY
LOGIK
U REF.
U START
ENTMAGNETISIERUNG/ DEGAUSSING
SMAGNETIZZ./ DEMAGNETISATION
90-
260V~
PRIMAERMASSE ACHTUNG: NICHT NETZGETRENNT
PRIMARY CHASSIS, NOTE: NOT MAINS ISOLATED
MASSE PRIMAIRE ATTENTION: NON ISOLE DU SECTEUR
MASSA PRIMARIO, ATTENZ.: NON SEPAR. DALLA RETE
NETZBAUSTEIN 29305-007.01
MAINS BOARD
PIASTRA DI RETE
MOD. SECTEUR


0V
① 1,3 VSS 10 µs/cm
② 3 VSS 5 µs/cm
③ ca. 70 VSS 5 µs/cm
④ 10 VSS 5 µs/cm
⑤ 780 VSS 5 µs/cm
⑥ 20 VSS 5 µs/cm
⑦ 0,8 VSS 5 ms/cm
⑧ ca.9,5 VSS 5 ms/cm
⑨ ca. 9,5 VSS 10 µs/cm
⑩ ca. 3,8 VSS 5 ms/cm
⑪ ca. 2,2 VSS 10 µs/cm
⑫ 20 VSS 5 ms/cm
⑬ 20 VSS 5 ms/cm
⑭ 2,2 VSS 5 ms/cm
⑮ ca. 42 VSS 5 ms/cm
⑯ 0,8 VSS 20 µs/cm
⑰ ca. 15 VSS 20 µs/cm
⑱ ca. 9,5 VSS 20 µs/cm
⑲ 1,8 VSS 5 ms/cm
⑳ 800 VSS 10 µs/cm
㉑ ca. 5,5 VSS 20 µs/cm
㉒ ca. 200 VSS 20 µs/cm
㉓ ca. 250 VSS 20 µs/cm
㉔ 75 VSS 20 µs/cm
㉕ ca.65 VSS 20 µs/cm
㉖ ca.150 VSS 20 µs/cm
㉗ ca.70 VSS 10 µs/cm
㉘ ca.50 VSS 10 µs/cm
㉙ ca.65 VSS 10 µs/cm


LED-PL 29304-013.17
LED BOARD
PIASTRA LED
C.I. LED
HDN 113 G
DP800
UAA 2022
IC881
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IC811
KEYBOARD
C.I. DE COMMANDE
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NICHT NETZGETRENNTES SCHALTUNGSTEIL
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CIRCUIT NON ISOLE DU SECTEUR
CIRCUITO NON SEPARATO DALLA RETE
WISCHER
TEMP. CONTACT
CONTATTO TEMP
SDA
ICL
SCL
TE
TDA 4601
IC 9600
START
STAND BY
LOGIK
U REF.
U START
ENTMAGNETISIERUNG/ DEGAUSSING
SMAGNETIZZ./ DEMAGNETISATION
90-
260V~
PRIMAERMASSE ACHTUNG: NICHT NETZGETRENNT
PRIMARY CHASSIS, NOTE: NOT MAINS ISOLATED
MASSE PRIMAIRE ATTENTION: NON ISOLE DU SECTEUR
MASSA PRIMARIO, ATTENZ.: NON SEPAR. DALLA RETE
NETZBAUSTEIN 29305-007.01
MAINS BOARD
PIASTRA DI RETE
MOD. SECTEUR

K.-TUNER 29504-101.01
CABLE TV TUNER
TUNER TV CAVO
TUNER TELEDISTRIBUTION

ZF/SYNC. 29504-162.65
IF SYNC.
SINCR. FI

VIDEOTEXT,3
TELETEXT
TELEVIDEO
ANTIOPE

EURO-AV-BUCHSE/EURO-AV SOCKET
PRESA EURO AV/EMBASE PERI TV

OFFEN B. IT
OPEN IN IT VERS.
APERTO NELLA VERS. IT.
OUVERT POUR VERS. IT.

VIDEOTEXT/TELETEXT 29504-108.04
TELEVIDEO

SENDERKENNUNG/STATION IDENT. -108.51
IDENT. STAZIONE/IDENT.EMETTEUR

VT-STECKERPLATTE -108.92
TELETEXT SOCKET BOARD
PIASTRA A SPINA TELEVIDEO
PLAQUE ENFICHABLE ANTIOPE

FARB/RGB 29504-165.01 MULTI
COLOURE/RGB
COLRE/RVB
DECODEUR/RVB

HDN 113 G
DP800

MC 144111
IC 820
(MOS)

I²C-BUS

SIEHE C530 +C/200V
SEE VEDI VOIR

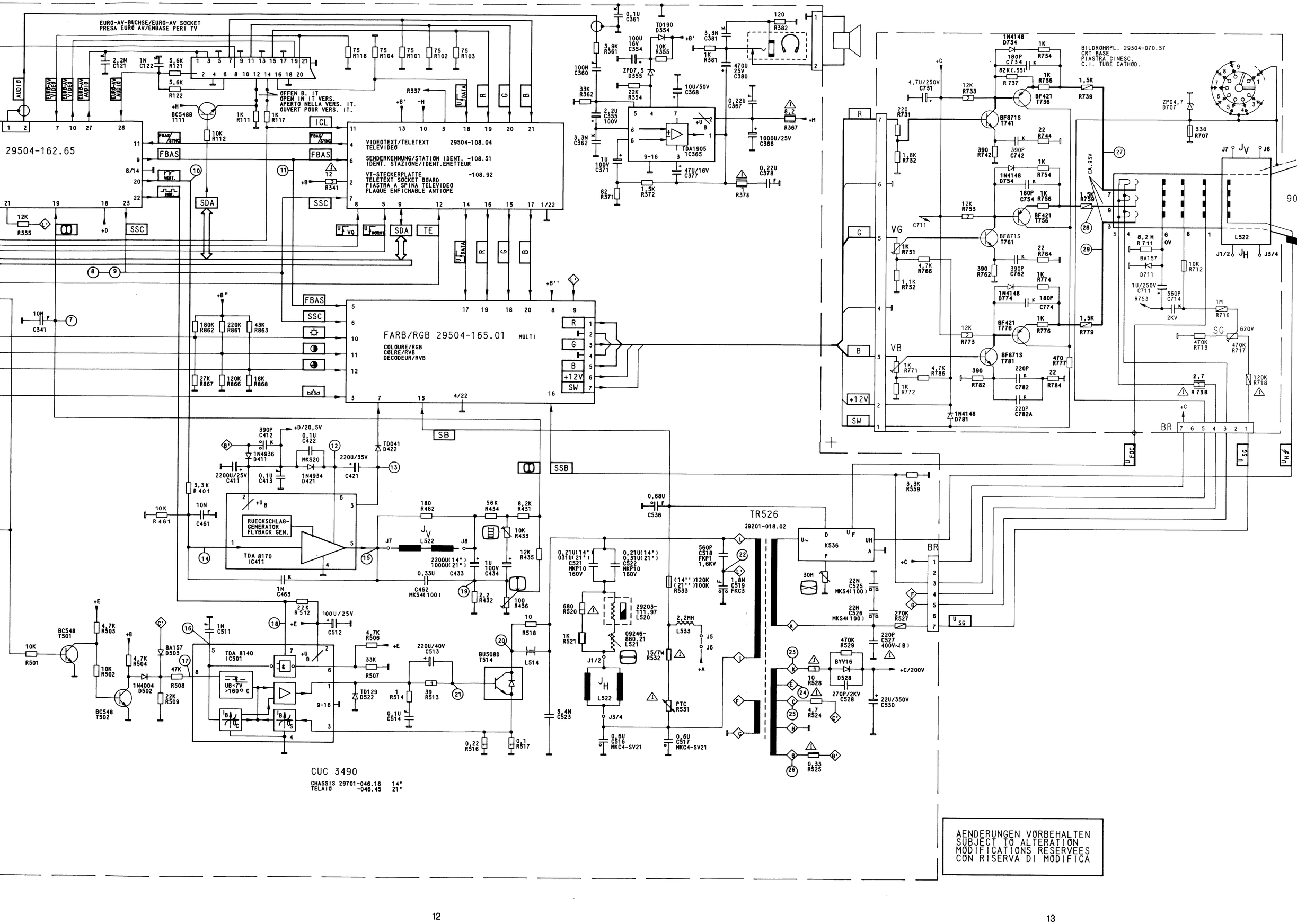
TR651 ⚠
29500-627.97

+A/120V
+B/11,5V
+M/13V
+B'/11,5V
+B''/11,5V
+E/8V
+H/5V
+D/20,5V

SIEHE C412
SEE VEDI VOIR

SB
SSB

CUC 3490
CHASSIS 29701-046.18 14"
TELAIO -046.45 21"

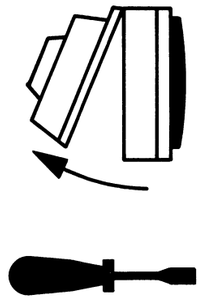
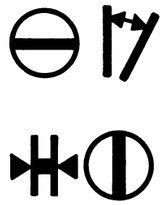
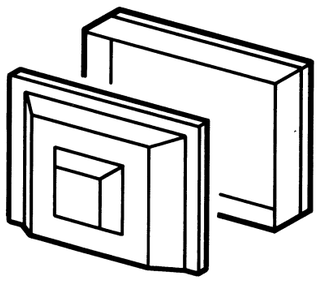
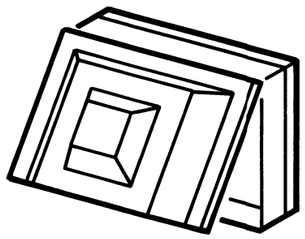
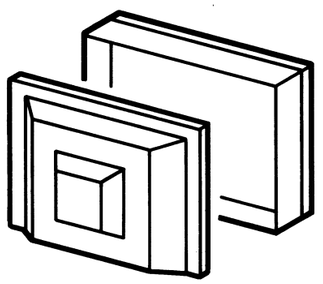


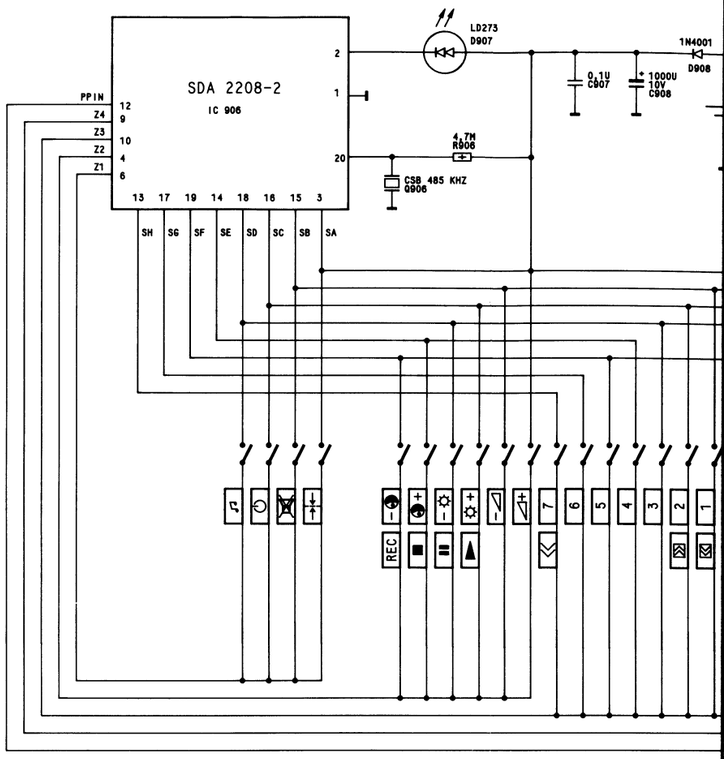
AENDERUNGEN VORBEHALTEN
SUBJECT TO ALTERATION
MODIFICATIONS RESERVEES
CON RISERVA DI MODIFICA

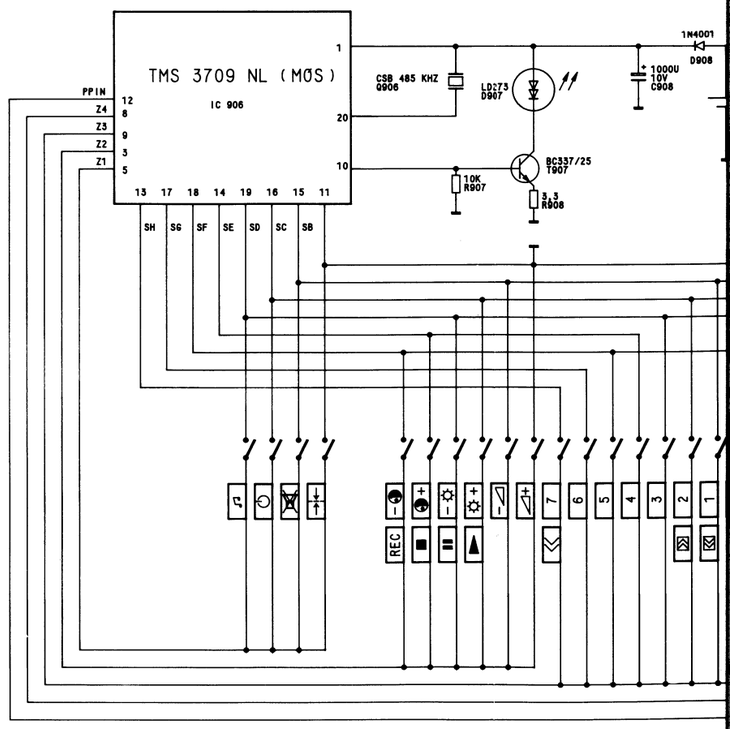
Ⓓ Abnehmen und Aufsetzen der Geräterückwand

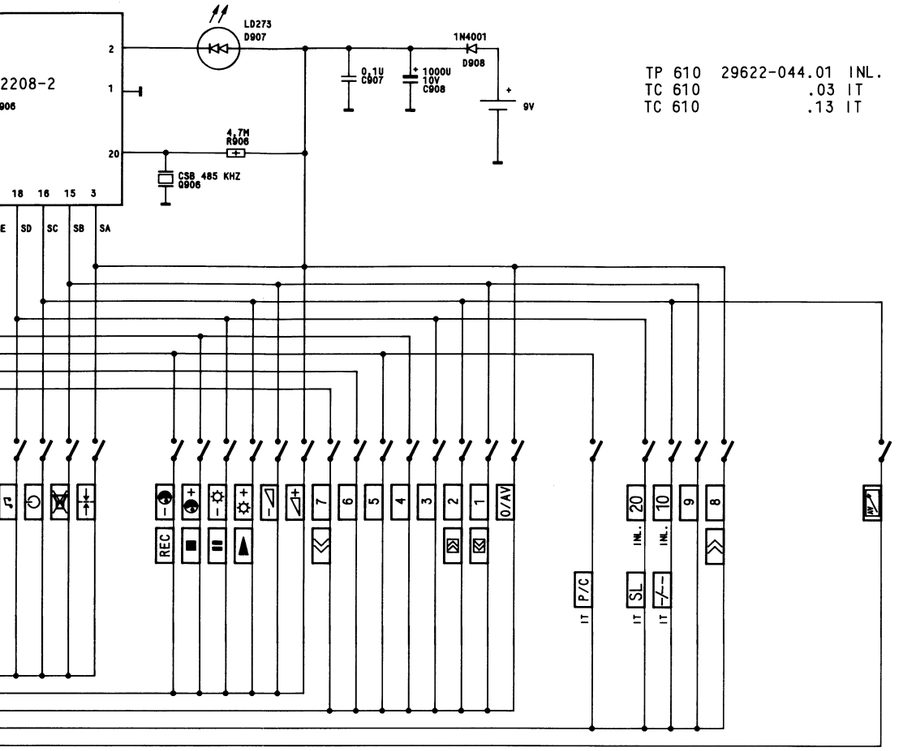
ⒼⒷ Disassembly and assembly of the cabinet rear panel

Ⓘ Smontaggio e montaggio dello schienale dell'apparecchio

Symbol auf der Geräterück-wand beachten! Please note the symbol at the rear of the cabinet! Osservare il simbolo sullo schienale			
Hinweis Note Nota	Schraubendreher (Größe 4) in die markierten Aussparungen stecken. Drücken oder drehen bis der Schnapphaken ausrastet. Insert the screwdriver (size 4) into the marked holes. Press or turn it until the catch disengages. Inserire un giravite (di misura 4) nelle rientranze contrassegnate. Premere o ruotare poi fino a che il gancio a scatto viene a sganciarsi.		Drehen um 90° Turn by 90° Ruotare di 90°
Abnehmen und Aufsetzen der Geräterückwand Disassembly and assembly of the cabinet rear panel Smontaggio e montaggio dello schienale			







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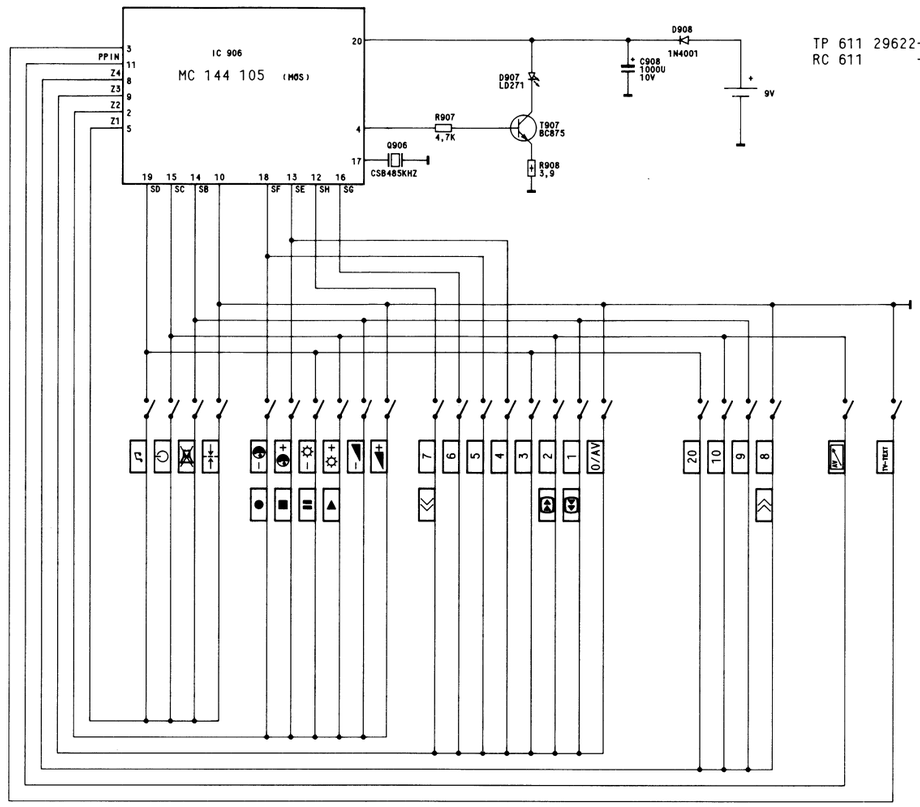
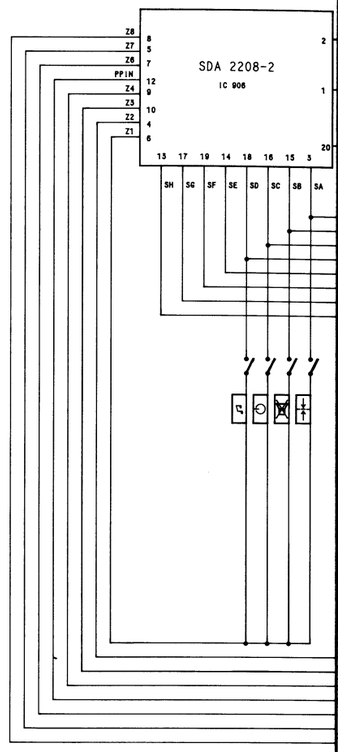
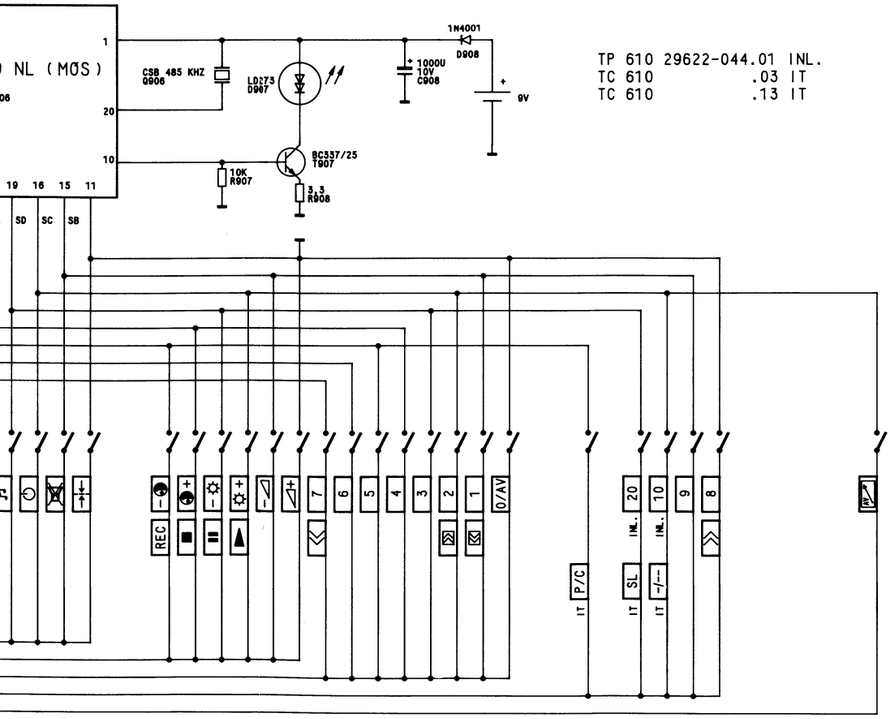
TC 610 .03 IT
TC 610 .13 IT

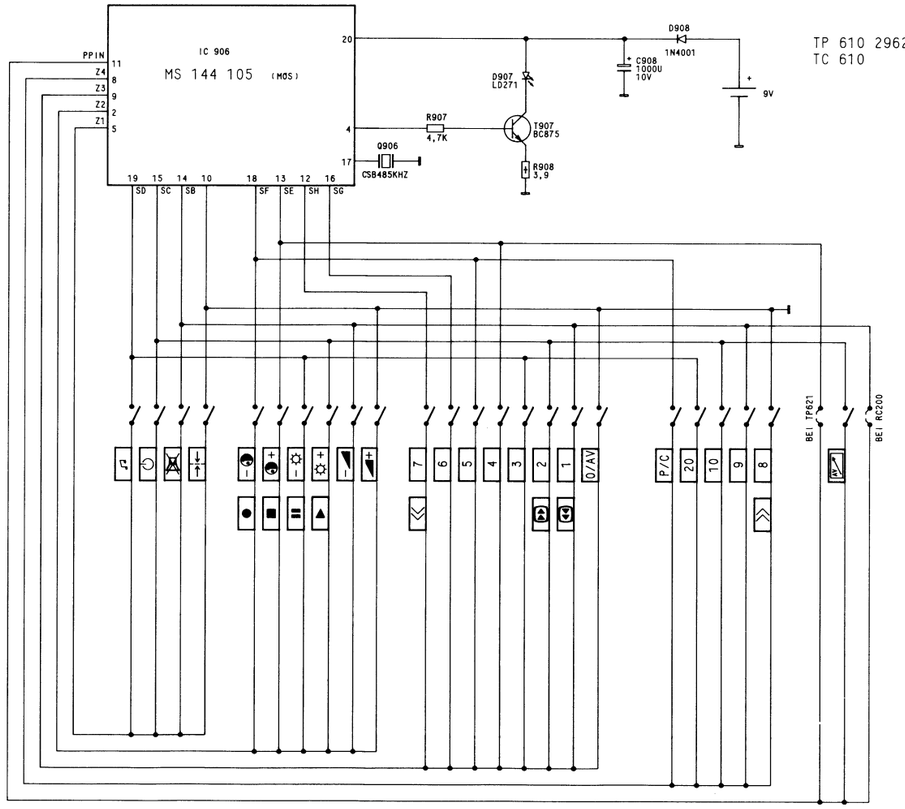


TP 611 29622-051.01
RC 611 -051.02

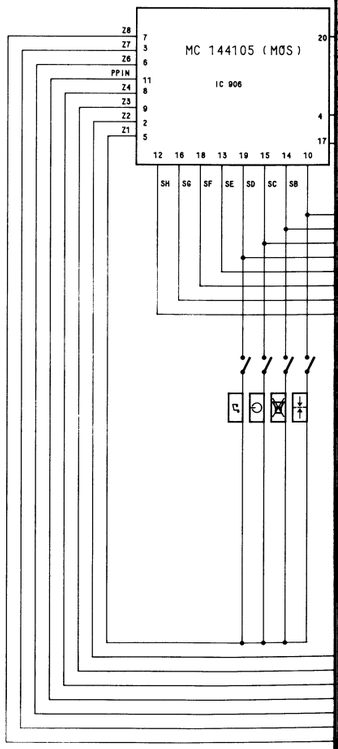




TP 610 29622-044.01 INL.
TC 610 .03 IT
TC 610 .13 IT



TP 610 29622-044.21
TC 610 -044.08 SIEMENS



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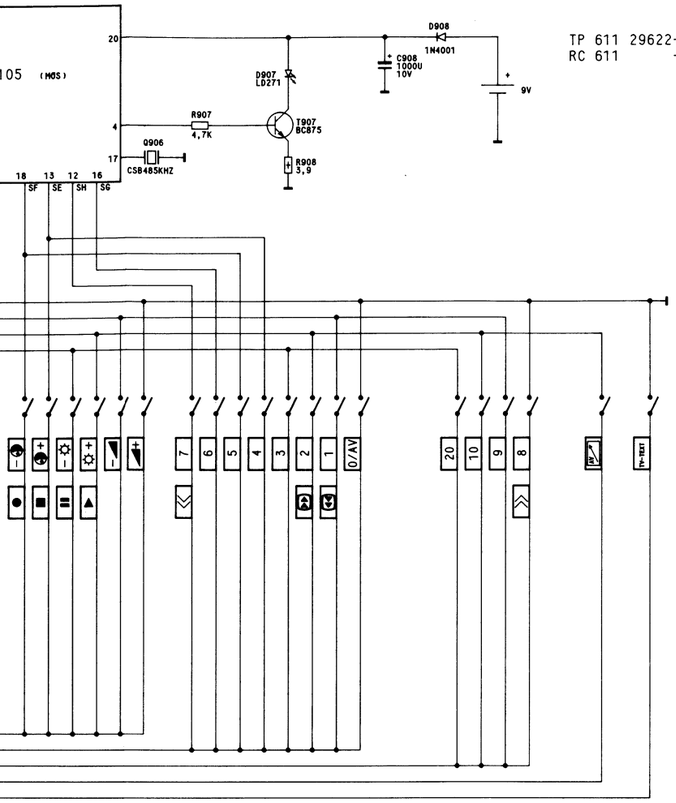
RC 611 -051.02



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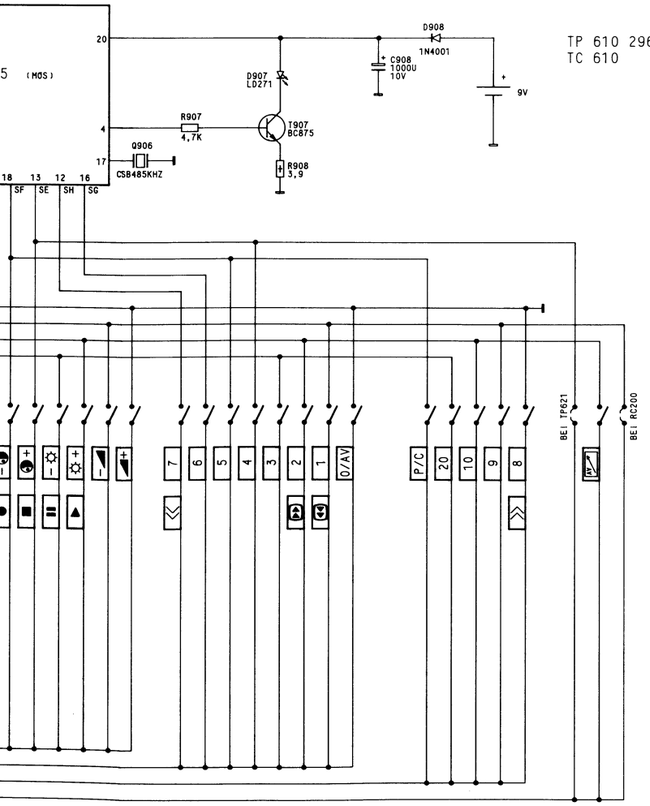
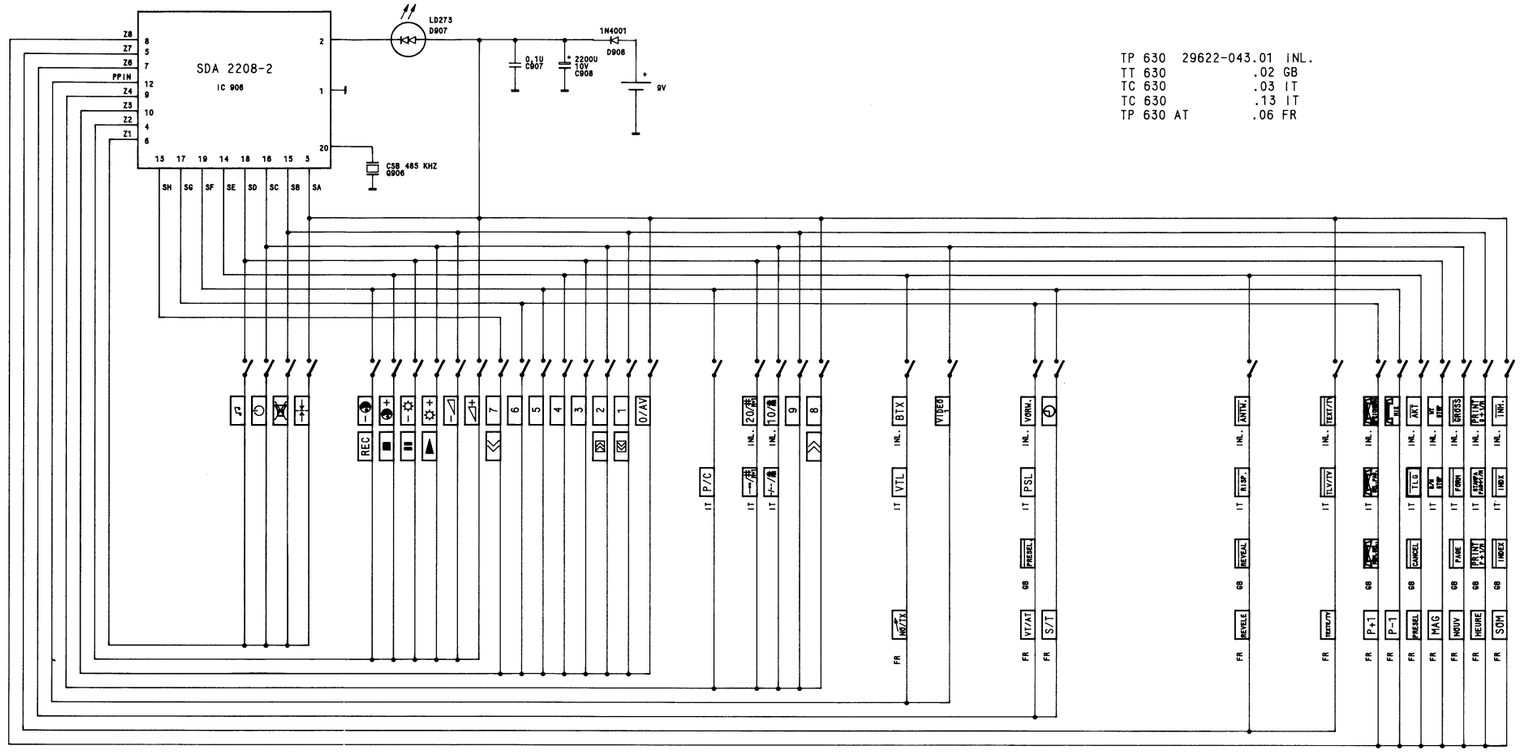
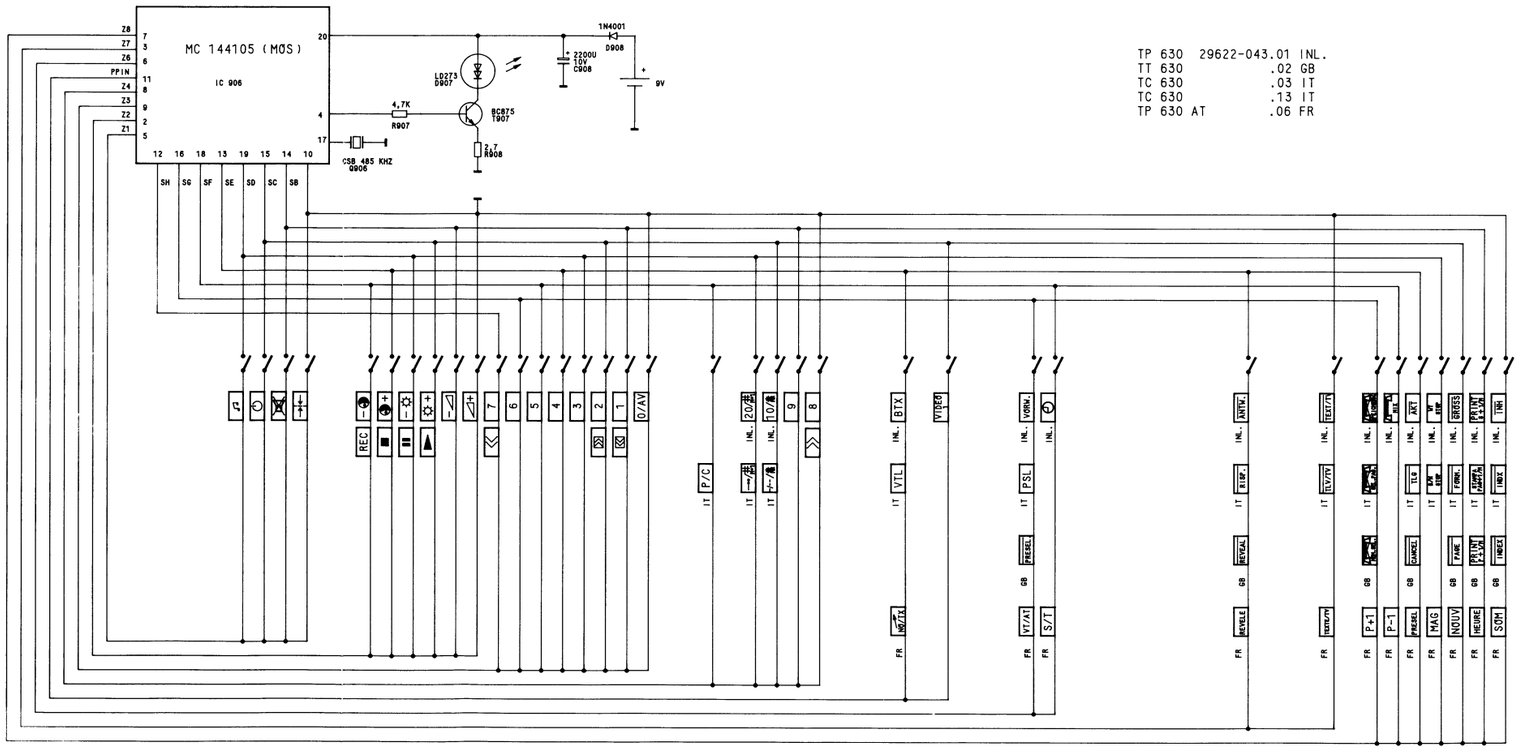
TC 610 -044.08 SIEMENS





TP 630 29622-043.01 INL.
TT 630 .02 GB
TC 630 .03 IT
TC 630 .13 IT
TP 630 AT .06 FR

29304-064.41 KEYBOARD



TP 630 29622-043.01 INL.
TT 630 .02 GB
TC 630 .03 IT
TC 630 .13 IT
TP 630 AT .06 FR

29304-064.42 KEYBOARD

KABEL-TUNER
CABLE TV TUNER
TUNER TV CAVO

29504-101.01
-101.02

TUA2000-4
IC2110

Kein Anpassungsabgleich bei Austausch der Steckkarte notwendig
When replacing the plug-in board, no alignment is necessary
Non è necessaria nessuna taratura di adattamento dopo la sostituzione di una scheda ad innesto

U TUN. 15
U UHF 22
U TUN. 13
+44V 1
+UB/5V 2
SDA 6
SCL 5
12P CC2021
BB505B D2021
9246-964 L2022
DT2021
180P CC2027
47P CC2028
BF579 CT2027
UHF
8,2P CC2030
1N CC2032
10N CC2033
MP13
270 CR2030
MP12
0,47UH L2030
MP12A
1K CR2023
1,5K CR2028
4,7K CR2027
1N CC2026
1N CC2029
2,7P CC2023
470P CC2024
1,5P CC2035
15 CR2035
BF569 CT2035
G UHF
680 CR2036
2,2K CR2039
150 CR2038
1N CC2036
0 CR2041
470P CC2039
33P CC2040
6,8K CR2040
33 CR2042
1,5P CC2044
9246-960 L2042
0,5P C2045
10P CC2047
BB505B D2047
2,2P CC2048
18K CR2048
22 CR2043
5,6P CC2143
120 CR 2140
MP10C
0,6P CC2141
0 CR2146
10N CC2049
0 CR2118
47U/16V C2046
9246-635 L2148
2,2P C2143
0 CR2143
8,2K CR2141
1N CC2140
2,2K CR2144
ZPD5,6 D2147
22K CR2142
47N C2142
4,7U 63V C2147
1,5K CR2149
ZPD24 D2148
10N CC2148
1N CC2154
SDA 2216
IC2141
MOS
SPEICHER
MEMORY
MEMORIA
100P CC2149
100P CC2146
U UHF
6,8 CR2154
47N C2156
22K CR2155
0,1U C2157
1N CC2165
BC847BR CT2156
16 15 5 4 2
F1 F2
I²C
G
4MHZ Q2163
12P CC2163
10N CC2151
220U/10V C2152
10N CC2161
PLL
1 18
10 12 13 11
SDA 3202-2
IC2161
14 17
7 6 9 8
22K R2156
22K R2157
22K R2158
BC858BR CT2151
22K CR2151
BC858BR CT2152
22K CR2152
BC858BR CT2153
22K CR2153
10N CC2159
6,8 R2159
1N CC2170
1N CC2171
1N CC2173
1N CC2174
56P CC2119
BB609A D2119
18K CR2119
B2M CD2115
18K CR2117
B2M CD2117
9246-762 L2121
9246-214 L2122
5,6P CC2122
BA682 CD2124
1N CC2124
1N CC2125
2,2K CR2124
U I/III
U VHF
56P CC2115
18K CR2115
MP10A
9246-742 L2117
5,6P C2117
18K CR2094
470P CC2103
6,8K CR2104
18K CR2087
9246-947 L2086
0 CR2095
1N CC2092
18K CR2082
18K CR2086
18K CR2092
BB609A D2086
B4M CD2092
1N CC2086
BF994 CT2070
VHF
G2 D S G1
6,8P CC2083
B4M CD2081
0,5P CC2085
470P CC2095
9246-956 L2070
BA682 CD2080
100K CR2070
1N CC2070
1N CC2080
0,47UH L2078
4,7K CR2081
150 CR2078
270 CR2072
1,5K CR2073
DT2088
BD III
9246-213 L2088
9246-213 L2095
DT2095
BB609A D2095
BA682 CD2089
BD I
9246-841 L2089
1,5P CC2091
9246-215 L2096
BA682 CD2096
1N CC2096
1N CC2089
4,7K CR2089
3,9 CR2090
6,8UH L2097
4,7K CR2096
1N CC2079
0 CR2098
10N CC2078
1N CC2072
10N CC2099
47P CC2101
TUA2000-4
IC2110
U REF.
ZF/UHF
ZF
7/16
MP9
MP8
7202-341
F2110
15P
180 R2102
0 CR2110
10N CC2102
1,5K CR2103
10N CC2110
27P CC2106
110 R2108
MP7
9246-942 L2108
8,2P CC2107
39P CC2105
MP16
100U 16V C2131
10N CC2132
MP14
MP15
ZF
ZF
U VQ
U HORIZ
U HORIZ
U HORIZ
26
24
16
14
12
10
3
4
7
8

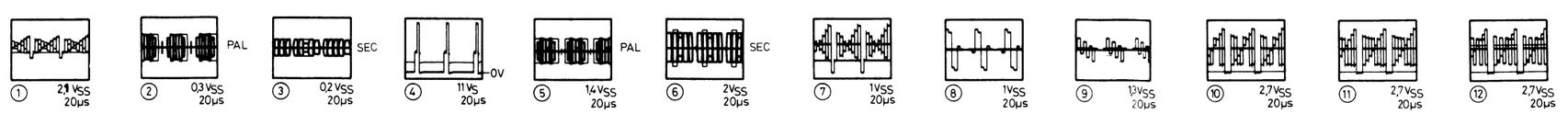
EURO-AV VIDEO
EURO-AV AUDIO
ZF
ZF
+UB 12V
+UB 12V
6/8/14
FBAS/SYNC
REF.
MC 14556
IC9240 (MOS)
DECODER
DECODER
TDA 4453
IC2220
TDA 2579
IC 9270
IC2215
07202-630 F2250
07202-381 F2206
07202-381 F2208
07202-650 F2211
07202-604 F2215
F2216 19202-566
F2253 07202-379
07207-631 F2258
0FW G3950 F2220
SFE5.5MC F2213
07202-421 F2214
07202-632 F2260
07202-6 F2275
BF414 T2201
BF414 T2215
BC558 T2215
BC558 T2232
BC548 T2230
BC548 T2268
BC548 T2278
BC548 T9259
BC548 T9260
BC558 T9262
BC558 T9258
BA282 D2215
BA282 D2214
BB329 D2207
BB329 D2206
BB329 D2209
BB329 D2208
BB329 D2212
BB329 D2211
BB409 D2216
BB409 D2266
BAT42 D2243
TD129 D2242
B4G D2253
TD129 D9201
TD129 D9204
TD129 D9203
TD129 D9202
TD129 D9206
TD129 D9208
TD129 D9207
TD129 D9209
TD129 D9211
TD129 D9212
TD129 D9216
TD129 D9213
TD129 D9214
TD129 D9218
TD129 D9217
TD129 D9248
TD129 D9249
TD129 D9253
TD041 D9276
TD482 D9273
TD482 D9274
TD482 D9279
TD482 D9281
6,2V D2217
10V D2245
D2233
D2232
D2231
1,5K R2251
330P C2252
10P C2253
680 R2203
4,7K R2202
10K R2201
1N C2201
L2201
8,2P C2203
100K R2206
8,2P C2206
100K R2208
8,2P C2208
100K R2211
10U/50V C2218
0,1U C2210
68P C2213
10P C2212
7-35P C2214
1N C2216
33UH L2216
1N C2217
2,2K R2217
27P C2221
3,3K R2216
6,8K R2218
47P C2215
10K R2215
0,1U C2226
1,5K R2212
68P C2211
4,7U/63V C2234
4,7U/63V C2232
22U/25V C2223
10K R2222
R 2223
R2289
560 R2213
4,7U/63V C2233
470 R2232
4,7K R2233
82K R2226
1K R2224
0,1U C2219
22K R2231
6,8K R2267
6,2K R2269
330 R2268
18P C2268
220 R2277
2,7K R2262
8,2P C2262
1N C2263
100K R2266
1N C2261
0,1U C2227
470 R2261
4,7K R2219
4,7N C2258
4,7N C2257
100K R2264
10K R2278
27 R2254
68P C2254
100K R2253
390 R2257
10U/50V C2243
10U/50V C2246
10U/50V C2247
10U/50V C2249
100U/50V C2248
15UH L2245
15UH L2246
15UH L2248
15UH L2249
1K R2244
0,1U C2244
47 R2248
560 R2241
270 R2242
100K R9247
100K R9242
100K R9241
100K R9243
100K R9246
100K R9248
100K R9251
100K R9253
100K R9252
47K R9258
100K R9201
470K R9206
100K R9207
33K R9202
220K R9203
0,1U C9201
22K R9208
33K R9211
100K R2256
33K R9213
22K R9212
0,1U C2209
47K R9217
56K R9216
510K R9218
1M R9226
120K R9224
33K R9221
27K R9222
220K R9223
100K R9227
4,7K R9228
36K R9229
22K R9254
1,5K R9256
820 R9266
2,2K R9262
820 R9264
820 R9261
15K R9280
100 R9281
0,22U C9281
1M R9282
2,2U/100V C9283
22U/25V C9282
22 R9283
R9284
1M R9285
47N C9284
0,15U C9286
10K R9286
4,7N C9288
82K R9274
15P C9274
18P C9275
39K R9273
10K R9272
39K R9271
2,2N C9271
0,1U C9272
10U 50V C9273
5,6K R9277
2,2K R9279
10U 50V C9279
1,2K R9278
0,15U C9278
100K R9264
10K R9222
1,5K R9212
10K R10K
+UB
NORM
MUTE 50/60HZ
SSC
HOR.
VERT.
MOD.
DET.
TAST.
REF.
KOIN DET.
DECODER
DECODER
GB
CCIR
FR
ÖTRT
US
FR III/IV
FRI
U HORM1
U HORM2
U I/III
U UHF
U VQ
EURO-AV VIDEO
EURO-AV AUDIO
ZF
ZF
+UB 12V
+UB 12V
FBAS/SYNC
REF.

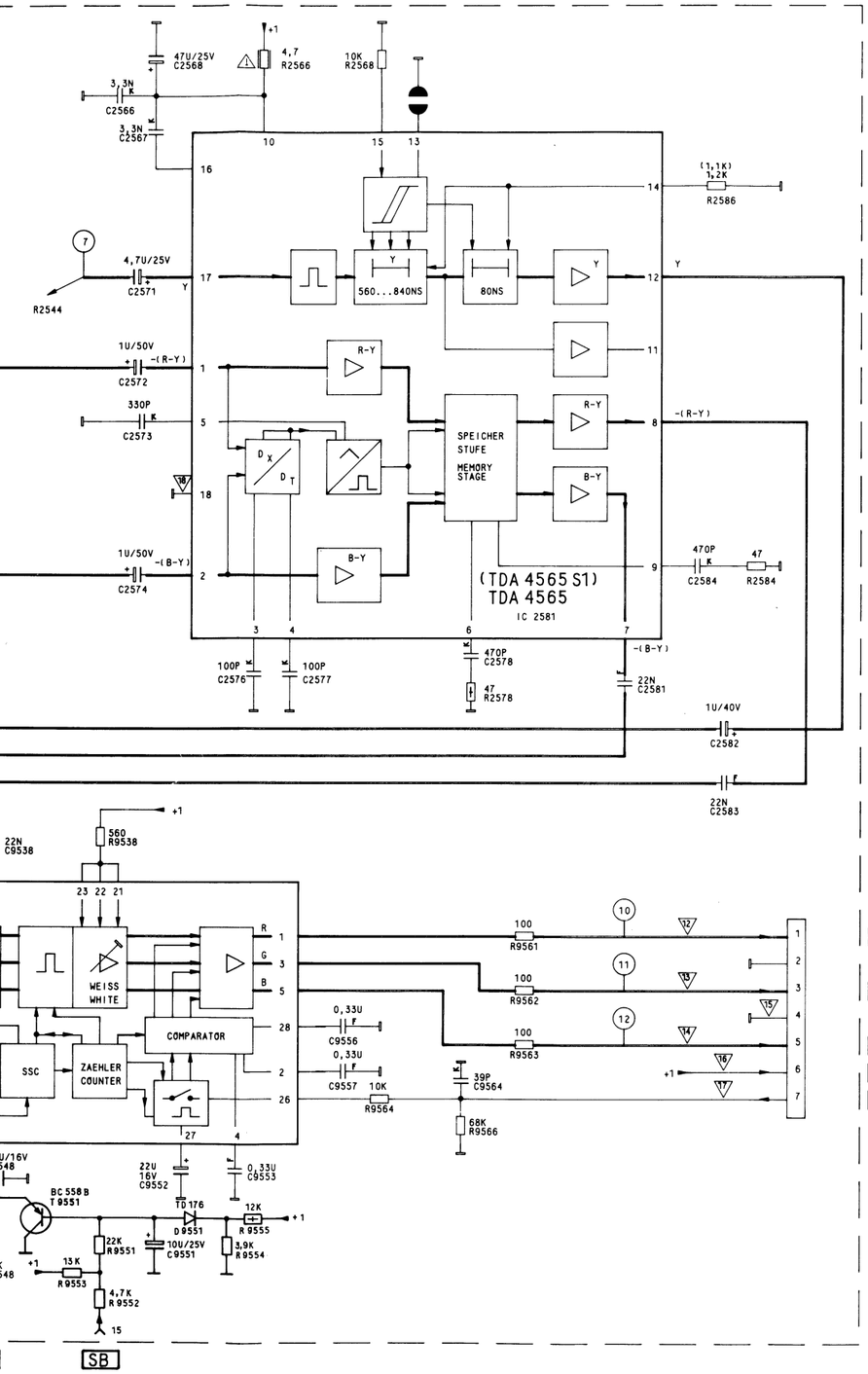
ZF-VERSTAERKER 29504-162.65 -162.66FR

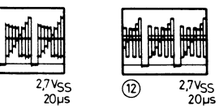
IF AMPLIFIER
AMPLI FI
AMPLIFICATORE FI

*	IC2215	D2232	D2233	D2234	R2223	R9284	R2289	C2231
-162.65	U4480	TD129	TD129	ZPD56	5,1K	5,6K	4,7K	10N
-162.66	U4480-2	——	——	——	——	4,7K	1 K	47N

FARB / RGB MULTI 29504-165.01 ZEILENIDENTIFIKATION / LINE IDENT. / IDENT. DI RIGA
COLOUR / RGB -165.02 BILDIDENTIFIKATION / PICTURE IDENT. / IDENT. DI QUADRO
COLORE / RVB -165.03
-185.01







1. Weißabgleich
- FuBK-Testbild einspeisen.
- ◑ min., ○ nom, ◑ max. einstellen.
- Regler VG und VB (Bildrohrplatte) so einstellen, daß keine Verfärbungen in den Grauwerten sichtbar sind.

2. Sperrpunktabgleich

Eine manuelle Einstellung ist nicht möglich, da die Steckkarte eine automatische Dunkelstromregelung besitzt. Kontrolle des Sperrpunkts (Oszilloskop erforderlich).
- FuBK-Testbild einspeisen.
- ◑ min., ○ nom., ◑ min., einstellen.
- Tastkopf an den Kollektoren der Transistoren T 736, T 756, T 776 anhängen (Bildrohrplatte). Die Schwarzwerte der drei Kathodensignale liegen bei ca. 140-150V.

3. Einstellungen im Farbkanal
- PAL-Testbild einspeisen.
- FK nom., H nom. K max. einstellen.
- IC-Pin 28 vom TDA 4555 mit +12V verbinden.
- IC-Pin 17 vom TDA 4555 mit Masse verbinden.
- Mit Trimmer C9516 die durchlaufenden Farbbalken zum Stehen bringen.
- Kurzschlußbrücken entfernen.
- Tastkopf an MP 12, mit Regler BP und Spule LZ die Doppelbilder des B-Signals zur Deckung bringen.
- NTSC-Testbild 3.5 MHz einspeisen.
- IC-Pin 26 vom TDA 4555 mit +12V verbinden.
- IC-Pin 17 vom TDA 4555 mit Masse verbinden.
- Mit Trimmer C9514 die durchlaufenden Farbbalken zum Stehen bringen.
- Kurzschlußbrücken entfernen.
- SECAM-Testbild einspeisen.
- Tastkopf an Pin 1 vom TDA 4555 anschließen, mit Spule DR Nullinie des (R-Y)-Signals auf Zeiienniveau bringen.
- Tastkopf an Pin 3 vom TDA 4555 anschließen, mit Spule DB Nullinie des (B-Y)-Signals auf Zeilentastniveau bringen.
- Spule F 2521 so einstellen, daß das (B-Y)-Signal keine Überschwinger hat.

4. Strahlstrom
- Der Regler "SSB" wird werkseitig auf Mittelwert eingestellt.
- Sollte bei vollem Kontrast und normal eingestellter Helligkeit in Spitzenweißfeldern des Sendertestbildes eine Defokussierung (starke Unschärfe bei weißen Schriftzeichen in Bildröhrenmitte) auftreten, so muß mit Regler "SSB" auf scharfe Schriftkonturen eingestellt werden (Reduzierung des Spitzenstrahlstromes).

1. White level adjustment
- Display colour bar test pattern.
- Set ◑ to min., ○ to nom., ◑ to max.
- Adjust presets VG and VB (CRT socket board) so that the picture does not show any colouration.

2. Adjustment of cut-off point

Manual adjustment is not possible, as the circuit board employs an automatic dark current control circuit.
To check cut-off point (oscilloscope required), proceed as follows:
- Display colour bar test pattern.
- Set ◑ to min., ○ to nom., ◑ to min.
- Connect test probe to collectors of T 736, T 756, T 776 (CRT socket board).
  The black leves of the three cathode signals should be 140-150V.

3. Adjustments in chroma channel
- Display PAL test pattern.
- Adjust colour level and brightness to nominal value, contrast to maximum.
- Connect pin 28 of IC TDA 4555 to +12V supply.
- Connect pin 17 to IC TDA 4555 to chassis.
- Adjust trimmer C9516 for stationary pattern in colour bars.
- Remove wire links.
- Connect test probe to test point MP 12. LBring the double image produced by the B-signal to coincidence by adjusting the preset BP and the coil LZ.
- Display 3.5 MHz NTSC test pattern.
- Connect pin 26 of IC TDA 4555 to +12V supply.
- Connect pin 17 of IC TDA 4555 to chassis.
- Adjust trimmer C 9514 for stationary pattern in colour bars.
- Remove wire links.
- Display SECAM test pattern.
- Connect test probe to pin 1 of IC TDA 4555.
- Use coil DR to align zero level of the (R-Y) signal with the line black level.
- Connect test probe to pin 3 of IC TDA 4555.
- Use coil DB to align zero level of the (B-Y) signal with the line black level.
- Adjust coil F2521 so that the (B-Y) signal is free of overshooting.

4. Beam current
- During manufacture the control "SSB" is adjusted to middle value.
- If during max. contrast and normal brightness adjustment the peak-white fields of the test picture should be defocused (in the middle of the screen white letters are very distorted) the contours of the letters must be adjusted using control "SSB" (reducing the peak beam current).

1. Taratura del bianco
- Applicare un monoscopio FuBK.
- Regolare ◑ al minimo, ○ sul valore nominale e ◑ al massimo.
- Con i regolatori VG e VB (piastra cinescopio) eliminare eventuali macchie di colore.

2. Taratura del punto di blocco

Una regolazione manuale non è possibile, poiché questa scheda incorpora una regolazione automatica della corrente d'interdizione.
Controllo del punto di blocco (é necessario un oscilloscopio):
- Applicare un monoscopio FuBK.
- Regolare ◑ al minimo, ○ sul valore nominale e ◑ al minimo.
- Collegare la sonda ai collettori dei transistori T 736, T 756, T 776 (piastra cinescopio).
  Valore nero dei tre segnali catodici ca. 140-150V.

3. Regolazione del canale colore
- Applicare un monoscopio PAL.
- Regolare FK e H sul valore nominale, K al massimo.
- Sull'integrato TDA 4555 collegare pin 28 a +12V.
- Sull'integrato TDA 4555 collegare pin 17 a massa.
- Con C9516 fermare le barre colorate scorrevoli.
- Togliere i cortocircuiti.
- Collegare la sonda a MP 12, con il regolatore BP e la bobina LZ portare a copertura le immagini doppie del segnale B.
- Applicare un monoscopio NTSC 3,5 MHz.
- Sull'integrato TDA 4555 collegare pin 26 a +12V.
- Sull'integrato TDA 4555 collegare pin 17 a massa.
- Con C9514 fermare le barre colorate scorrevoli.
- Togliere i cortocircuiti.
- Applicare un monoscopio SECAM.
- Collegare la sonda al pin 1 dell'integrato TDA 4555, con la bobina DR portare la linea zero del segnale (R-Y) sul livello della frequenza di riga.
- Collegare la sonda al pin 3 dell'integrato TDA 4555, con la bobina DB portare la linea zero del segnale (B-Y) sul livello della frequenza di riga.
- La bobina F2581 applicarla cosi in modo che il segnale (B-Y) sia chiaro.

4. Corrente catodica
- Il regolatore "SSB" viene regolato già in fabbrica su valori medi.
- Se con il contrasto al massimo ed una regolazione normale della luminosità dovesse presentarsi una sfocalizzazione nei campi ultrabianchi del cinescopio (le lettere bianche al centro del cinescopio risultano molto sfuocate), agire sul regolatore "SSB" per mettere a fuoco i contorni delle lettere (riducendo la corrente catodica di picco).

Service per I²C-Bus

Se l'apparecchio funziona erroneamente e ció non dipende nè dall'alimentatore, nè dall'alta tensione o dalla deflessione, occorre controllare il bus I²C secondo la tabella ; prima di effettuare altri lavori di assistenza come da tabella 2.
Il microcomputer nell'unitá di comando IC 811 fornisce le istruzioni per tuner, televideo, T 111 (alla presa EURO/SCART) attraverso il bus I²C.
Nota:
Spegnere l'apparecchio durante la sostituzione di un modulo! Non togliere il modulo memmeno con apparecchio in posizione d'attesa! Fare attenzione alle norme MOS.

Tabella 1

Misura	Valore di misura	Punto di misura	Possibili guasti
+ H	5 V	Pin 3, IC 811	D 671, IC 673, IC 811
Cadenza 4 MHz Reset	4 MHz, 3 V_{pp} 4 V_{pp} solo all'atto dell'accensione	Pin 5, IC 811 Pin 28	F 808, IC 811 D 804, T 806, IC 811
Bus I²C	5 V_{pp}	Pin 19, 18, IC 811	I dati nel bus I²C sono presenti anche senza comando da TP o immissione tramite tastiera. Se i dati mancano: interrompere le linee SDA e SCL. Se ora i dati sono presenti, nel bus I²C c'è un sovraccarico. **Possibili cause del guasto:** tuner, televideo, IC 811, T 111

Tabella 2

Possibili guasti nell'apparecchio

Guasto	Possibile causa	Valore de misura	Punto di misura
Non é possibile sintonizzare la frequenza	Tuner (memoria, PLL)	+ 0,2–30 V	Pin 13, 15
	+ B' + H + A	+ 11,5 V + 5 V ca. + 44 V	Tuner Pin 16 Tuner Pin 2 Tuner Pin 1
Nessuna funzione viene accettata	+ H, IC 811	+ 5 V	IC 811 Pin 3
Indicazione LED errata	IC 811		
	F 808	4 MHz, 3 V	IC 811 Pin 5
Manca l'audio	Nessun riconoscimento di coincienza (FI/SYNC)	>3 V	IC 811 Pin 9
	IC 365	+ M/ca. 12 V	IC 365 Pin 2
Non viene commutato il programma con TP	Preamplif. IR	Segnale IR 5 V_{pp}	IC 811 Pin 2
Manca il valore analogico per luminosità contrasto contrasto colore	 IC 811, IC 820 IC 811, IC 820 IC 811, IC 820	 1-3 V 2-4 V 2-4 V	 Colore/RGB Pin 10 Colore/RGB Pin 11 Colore/RGB Pin 12
Accendendo con tasto rete l'apparecchio commuta in posizione d'attesa	T 801	All'atto dell'accensione brevemente «LOW» (collettore).	IC 811 Pin 12
Nessun segnale FBAS	Tuner	ca. 10 V	Tuner Pin 3
	SINCR. FI	ca. 10 V	SYNCR. FI Pin 12
	+ B, + B'	+ 12 V	SYNCR. FI Pin 25, 24
Manca la funzione Televideo	+ B, + B'	+ 11,5 V	VT pin 2, 13
	bus I²C SDA	5V_{pp}	VT pin 9
	ICL	5V_{pp}	VT pin 11

Service checks on the I²C bus

If faluts occur in the set which cannot be attributed to the power supply unit, the EHT or the deflection system, the I²C bus should be checked using Table 1 before further service work is carried out using Table 2.
Via the I²C bus the microcomputer in the control unit IC 811 supplies control signals for the tuner, videotext (teletext) T 111 (to the EURO-AV-socket).
Note:
When a module is being changed, the set should be switched off completely. Modules must not be unplugged even in the »standby« mode! Observe MOS handling precautions.

Table 1

Test	Test Figures	Test Point	Possible faults
+ H	5 V	Pin 3, IC 811	D 671, IC 673, IC 811
4 MHz clock Reset	4 MHz, 3 V_{pp} 4 V_{pp} only at moment of switch on	Pin 5, IC 811 Pin 28	F 808, IC 811 D 804, T 806, IC 811
I²C bus	5 V_{pp}	Pin 19, 18, IC 811	The I²C bus data are present even without input from the remote control or keyboard. If data are absent disconnect the SDA and SCL lines. If data are then present on the I²C bus, the I²C bus is overloaded. Possible faults: Tuner, Videotext, IC 811, (Teletext), T 111

Table 2

Possible faults which can occur in any part of the set

Fault	Possible Cause	Test Figure	Test Point
No frequency tuning	Tuner (memory, PLL)	+ 0,2–30 V	Pin 13, 15
	+ B' + H + A	+ 11.5 V + 5 V ca. + 44 V	Tuner pin 16 Tuner pin 2 Tuner pin 1
No functions appecpted	+ H, IC 811	+ 5 V	IC 811 pin 3
Incorrect LED indication	IC 811		
	F 808	4 MHz, 3 V	IC 811 pin 5
No sound	No coincidence identification (IF/SYNC.)	>3 V	IC 811 pin 9
	IC 365	+ M/about 12 V	IC 365 pin 2
Programme cannot be change with remote control	IR-preamplifier	IR-signal 5 V_{pp}	IC 811 pin 2
No analog signals for Brightness Contrast Colour contrast	 IC 811, IC 820 IC 811, IC 820 IC 811, IC 820	 1-3 V 2-4 V 2-4 V	 Colour/RGB, pin 10 Colour/RGB, pin 11 Colour/RGB, pin 12
Set switches to standby mode on operation of power button	T 801	Short-time "LOW" on switch-on (collector)	IC 811, pin 12
No CCVS	Tuner	approx. 10 V	Tuner, pin 3
	IF SYNC.	approx. 10 V	IF-SYNC., pin 12
	+ B, + B'	+ 11.5 V	IF-SYNC., pin 25, 24
No Videotext (Teletext)	+ B, + B'	+ 11.5 V	VT pin 2, 13
	I²C bus SDA	5V_{pp}	VT pin 9
	ICL	5V_{pp}	VT pin 11

Service am I²C-Bus

Bei Fehlfunktionen des Gerätes, die nicht auf Netzteil, Hochspannung und Ablenkung zurückzuführen sind, ist der I²C-Bus gemäß Tabelle 1 zu prüfen, bevor weitere Servicearbeiten nach Tabelle 2 durchgeführt werden.
Der µComputer in der Bedieneinheit IC 811 liefert Steuerbefehle für Tuner, Videotext, T 111 (zur EURO-AV-BUCHSE) über den I²C Bus.
Hinweis:
Bei Modulwechsel ist das Gerät generell auszuschalten!
Auch in Stellung »Bereitschaft« darf kein Modul gezogen werden! MOS-handling beachten.

Tabelle 1

Messung	Meßwert	Meßpunkt	Mögliche Fehler
+ H	5 V	Pin 3, IC 811	D 671, IC 673, IC 811
4 MHz Takt Reset	4 MHz, 3 V_{ss} 4 V_{ss} nur im Einschaltmoment	Pin 5, IC 811 Pin 28	F 808, IC 811 D 804, T 806, IC 811
I²C Bus	5 V_{ss}	Pin 19, 18, IC 811	Die I²C-Bus-Daten sind auch ohne TP-Bedienung oder Keyboardeingabe vorhanden. Bei fehlenden Daten: Die Leitungen SDA und SCL auftrennen. Sind dann die I²C-Bus-Daten vorhanden, liegt eine Überlastung des I²C-Bus vor. **Fehlerursache:** IC 811, Tuner, Videotext, T 111.

Tabelle 2

Mögliche Fehlerarten des Gesamtgerätes

Fehler	Mögliche Ursache	Meßwert	Meßpunkt
Keine Frequenzabstimmung	Tuner (Speicher, PLL)	+ 0,2–30 V	Pin 13, 15
	+ B' + H + A	+ 11,5 V + 5 V ca. + 44 V	Tuner Pin 16 Tuner Pin 2 Tuner Pin 1
Keine Bedienfunktion	+ H, IC 811	+ 5 V	IC 811 Pin 3
LED falsche Anzeige	IC 811		
	F 808	4 MHz, 3 V	IC 811 Pin 5
Kein Ton	Keine Koinzidenzkennung (ZF/SYNC.)	>3 V	IC 811 Pin 9
	IC 365	+ M/ca. 12 V	IC 365 Pin 2
Keine Programmschaltung mit TP	IR-Vorverstärker	IR-Signal 5 V_{ss}	IC 811 Pin 2
Keine Analogwerte für Helligkeit Kontrast Farbkontrast	 IC 811, IC 820 IC 811, IC 820 IC 811, IC 820	 1-3 V 2-4V 2-4 V	 Farb/RGB Pin 10 Farb/RGB Pin 11 Farb/RGB Pin 12
Beim Einschalten mit der Netztaste schaltet das Gerät auf Bereitschaft.	T 801	beim Einschalten kurzzeitig »LOW« (Kollektor)	IC 811 Pin 12
Kein FBAS-Signal	Tuner	ca. 10 V	Tuner Pin 3
	ZF/SYNC.	ca. 10 V	ZF/SYNC. Pin 12
	+ B, + B'	+ 11,5 V	ZF/SYNC. Pin 25, 24
Kein Videotext	+ B, + B'	+ 11,5 V	VT Pin 2, 13
	I²C Bus SDA	5V_{ss}	VT Pin 9
	ICL	5V_{ss}	VT Pin 11

spannung und Ablenkung zu-
evor weitere Servicearbeiten

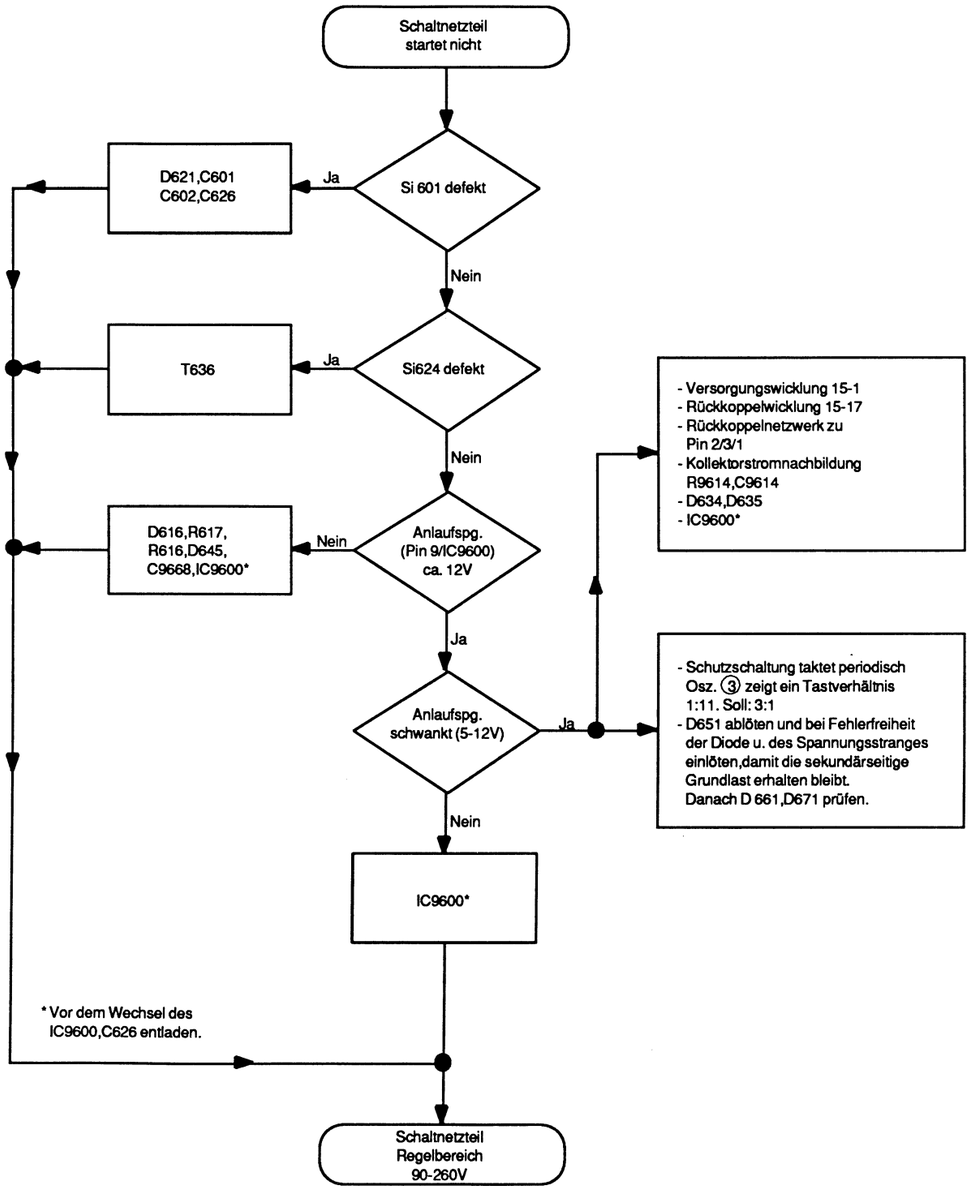
hle für Tuner, Videotext, T 111

en! MOS-handling beachten.

ögliche Fehler
671, IC 673, IC 811
08, IC 811 304, T 806, IC 811
e I²C-Bus-Daten sind auch ne TP-Bedienung oder Key- ardeingabe vorhanden. Bei hlenden Daten: Die Leit- gen SDA und SCL auf- nnen. Sind dann die C-Bus-Daten vorhanden, gt eine Überlastung s I²C-Bus vor. **hlerursache:** IC 811, ner, Videotext, T 111.

	Meßpunkt
	Pin 13, 15
	Tuner Pin 16 Tuner Pin 2 Tuner Pin 1
	IC 811 Pin 3
	IC 811 Pin 5
	IC 811 Pin 9
	IC 365 Pin 2
	IC 811 Pin 2
	Farb/RGB Pin 10 Farb/RGB Pin 11 Farb/RGB Pin 12
n «	IC 811 Pin 12
	Tuner Pin 3
	ZF/SYNC. Pin 12
	ZF/SYNC. Pin 25, 24
	VT Pin 2, 13
	VT Pin 9
	VT Pin 11

(D) Tips zur Fehlersuche - Primärseite liegt an Netzpotential. Gerät mit Netztrenntransformator betreiben!



Funktionsbeschreibung

Aus der Netzspannung wird durch den Brückengleichrichter D 621 eine positive Gleichspannung von ca. + 300 V gewonnen. Über die Primärwicklung des Netztrafos TR 651 - Anschlüsse 13 und 11- liegt der Hochvolt-Schalttransistor T 636 - an dieser Gleichspannung. Die integrierte Schaltung IC 9600 (TDA 4601) übernimmt die Ansteuerung, Regelung und Überwachung des Schalt-Transistors T 636. Die Basis von T 636 wird über C 9641 und L 9646 von Pin 7 des IC 9600 mit einer Rechteckspannung von ca. 2,5 V angesteuert.
In der Sperrphase von Transistor T 636, nimmt der magnetische Fluß im Sperrwandlertrafo ab, in den Sekundärwicklungen werden Spannungen induziert, deren Strom über die jetzt leitenden Dioden die Lastkreise mit Energie versorgt. Da nur während der Sperrphase des Transistors T 636 Energie in die Lastkreise übertragen wird, nennt man diese Version Sperrwandler-Nezteil. Die Schaltfrequenz des Transistors liegt je nach Last zwischen 15 und 70 kHz. Die größte Stromflußzeit und damit die höchste Leistungsübertragung wird bei niedriger Frequenz und geringem Tastverhältnis erreicht. Normale Betriebswerte sind etwa 30 kHz bei einem Tastverhältnis 3:1.

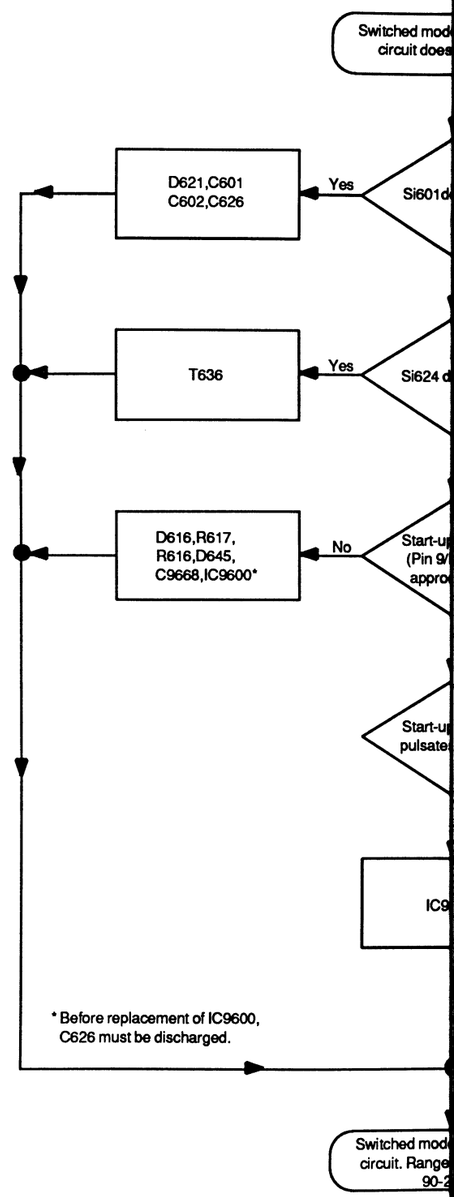
Anlaufschaltung:
Über R 616, PTC R 617 und die Diode D 616 erhält der TDA 4601 an Pin 9 eine Anlaufspannung von ca. 12 V. Nach dem Anlaufen des Sperrwandlers wird während der Sperrphase des Transistors T 636, aus der Wicklung 15-1, eine stabile Spannung gewonnen. Diese gelangt über die Diode D 645 an den Pin 9 des IC 9600.
Sollte die Netzspannung < 170 V werden, wird beim Startvorgang aus der Wicklung 15-17 eine Spannung gewonnen und über Transistor T 9667 an Pin 9 eingespeist. Da diese Spannung nicht stabil ist, wird sie durch den Transistor T 9667 und die Diode D 9667 stabilisiert.

Normalbetrieb:
Am Eingang Pin 2 des TDA 4601 werden die Nulldurchgänge der von der Rückkoppelspule eingespeisten Frequenzen registriert und an eine interne Steuerlogik weitergegeben. Den Pin 3, einem Regeleingang, werden die gleichgerichteten Amplitudenänderungen der Rückkoppelspule (15-17) über den Einsteller R 647 zugeführt. Das Schaltnetzteil ermöglicht folgende Betriebszustände:

a) Normalbetrieb
alle Versorgungsspannungen stehen zur Verfügung.

b) Stand- by-Betrieb
T 681 sperrt T 684. Dadurch fehlt die + B´ Spannung. Außerdem wird der Treiber IC 551 (Zeilenansteuerung) über T 501, T 502 am Pin 8 gesperrt. Der T 514 (Zeilenablenktransistor) erhält an der Basis keine Ansteuerung und sperrt. Dadurch ist keine Hochspannung und keine Zeilenablenkung vorhanden.

(GB) Tips for Fault location - Primary side is norm



transformator betreiben!

wicklung 15-1
icklung 15-17
etzwerk zu

nnachbildung
4

ung taktet periodisch
ein Tastverhältnis

und bei Fehlerfreiheit
es Spannungsstranges
die sekundärseitige
alten bleibt.
,D671 prüfen.

Funktionsbeschreibung

Aus der Netzspannung wird durch den Brückengleichrichter D 621 eine positive Gleichspannung von ca. + 300 V gewonnen. Über die Primärwicklung des Netztrafos TR 651 - Anschlüsse 13 und 11- liegt der Hochvolt-Schalttransistor T 636 - an dieser Gleichspannung. Die integrierte Schaltung IC 9600 (TDA 4601) übernimmt die Ansteuerung, Regelung und Überwachung des Schalt-Transistors T 636. Die Basis von T 636 wird über C 9641 und L 9646 von Pin 7 des IC 9600 mit einer Rechteckspannung von ca. 2,5 V angesteuert.
In der Sperrphase von Transistor T 636, nimmt der magnetische Fluß im Sperrwandlertrafo ab, in den Sekundärwicklungen werden Spannungen induziert, deren Strom über die jetzt leitenden Dioden die Lastkreise mit Energie versorgt. Da nur während der Sperrphase des Transistors T 636 Energie in die Lastkreise übertragen wird, nennt man diese Version Sperrwandler-Nezteil. Die Schaltfrequenz des Transistors liegt je nach Last zwischen 15 und 70 kHz. Die größte Stromflußzeit und damit die höchste Leistungsübertragung wird bei niedriger Frequenz und geringem Tastverhältnis erreicht. Normale Betriebswerte sind etwa 30 kHz bei einem Tastverhältnis 3:1.

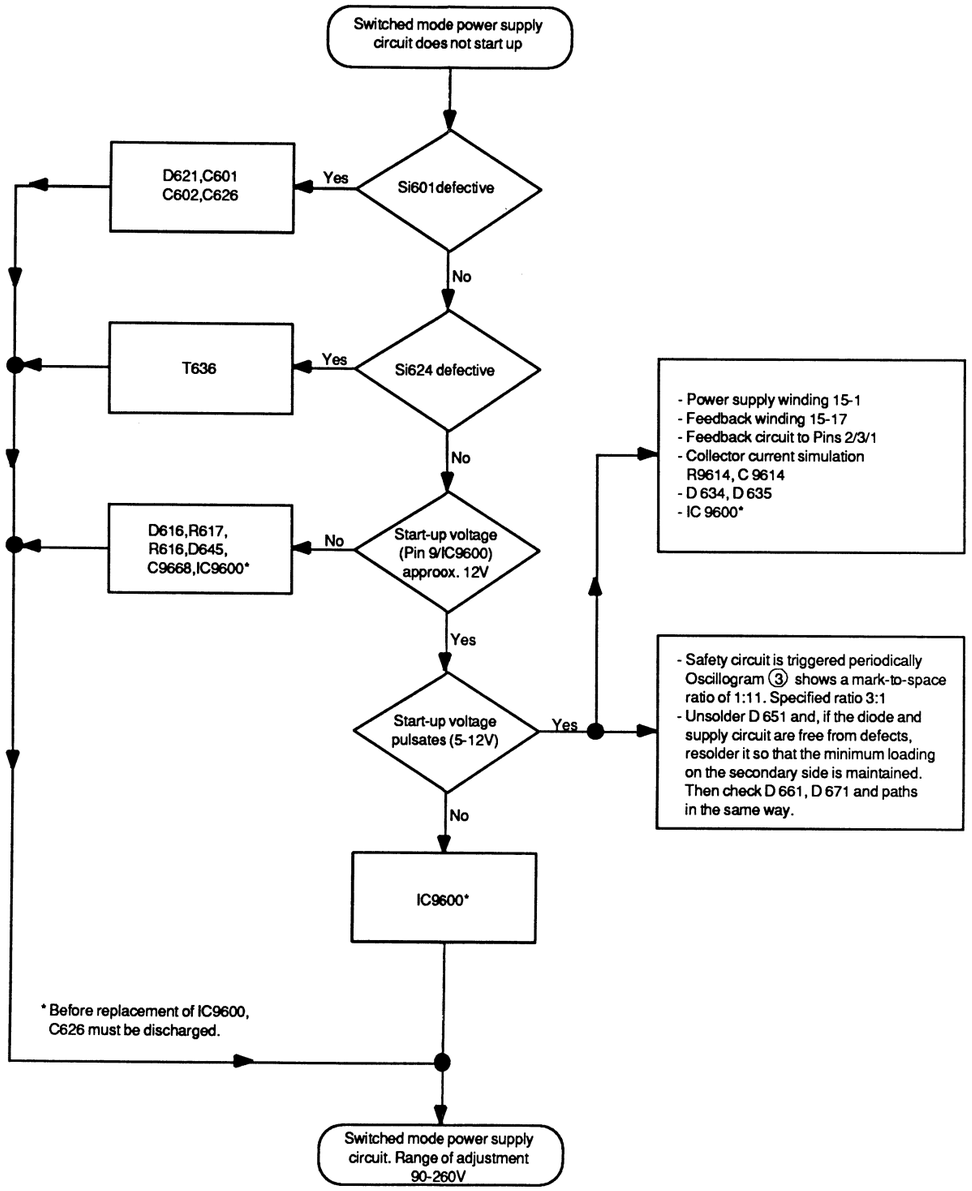
Anlaufschaltung:
Über R 616, PTC R 617 und die Diode D 616 erhält der TDA 4601 an Pin 9 eine Anlaufspannung von ca. 12 V. Nach dem Anlaufen des Sperrwandlers wird während der Sperrphase des Transistors T 636, aus der Wicklung 15-1, eine stabile Spannung gewonnen. Diese gelangt über die Diode D 645 an den Pin 9 des IC 9600.
Sollte die Netzspannung < 170 V werden, wird beim Startvorgang aus der Wicklung 15-17 eine Spannung gewonnen und über Transistor T 9667 an Pin 9 eingespeist. Da diese Spannung nicht stabil ist, wird sie durch den Transistor T 9667 und die Diode D 9667 stabilisiert.

Normalbetrieb:
Am Eingang Pin 2 des TDA 4601 werden die Nulldurchgänge der von der Rückkoppelspule eingespeisten Frequenzen registriert und an eine interne Steuerlogik weitergegeben. Den Pin 3, einem Regeleingang, werden die gleichgerichteten Amplitudenänderungen der Rückkoppelspule (15-17) über den Einsteller R 647 zugeführt. Das Schaltnetzteil ermöglicht folgende Betriebszustände:

a) Normalbetrieb
alle Versorgungsspannungen stehen zur Verfügung.

b) Stand- by-Betrieb
T 681 sperrt T 684. Dadurch fehlt die + B´ Spannung. Außerdem wird der Treiber IC 551 (Zeilenansteuerung) über T 501, T 502 am Pin 8 gesperrt. Der T 514 (Zeilenablenktransistor) erhält an der Basis keine Ansteuerung und sperrt. Dadurch ist keine Hochspannung und keine Zeilenablenkung vorhanden.

(GB) Tips for Fault location - Primary side is normally not isolated. Operate set with mains isolating transformer


Switched mode power supply circuit does not start up
Si601 defective
Yes
D621, C601 C602, C626
No
Si624 defective
Yes
T636
No
Start-up voltage (Pin 9/IC9600) approx. 12V
No
D616, R617, R616, D645, C9668, IC9600*
Yes
Start-up voltage pulsates (5-12V)
Yes
No
IC9600*
- Power supply winding 15-1
- Feedback winding 15-17
- Feedback circuit to Pins 2/3/1
- Collector current simulation R9614, C 9614
- D 634, D 635
- IC 9600*
- Safety circuit is triggered periodically Oscillogram ③ shows a mark-to-space ratio of 1:11. Specified ratio 3:1
- Unsolder D 651 and, if the diode and supply circuit are free from defects, resolder it so that the minimum loading on the secondary side is maintained. Then check D 661, D 671 and paths in the same way.
* Before replacement of IC9600, C626 must be discharged.
Switched mode power supply circuit. Range of adjustment 90-260V

Functional Description

A positive DC voltage of approximately 300 V is obtained via the bridge rectifier D 621. This DC voltage is applied to the high voltage switching transistor TR 636 via the primarywinding of the mains transformer TR 651 from connections 13 and 11. The integrated circuit IC 9600 (TDA 4601) carries out the functions of driving,controlling and monitoringthe switching transistor T 636. The base of T 636 is supplied with a rectangular voltageof approximately 2.5 V from pin 7 of IC 9600 via C 9641 and L 9646.
When the transistor T 636 is switched off the magnetic flux in the B.O.-type convertertransformer decreases, a voltage is induced into the secondary windings causing currentto flow via the now conducting diodes which supply the load circuits with energy. As the energy is is transferred into the load circuits during the switched off phase of the transistor T 636 thistype of circuit is called B.O.-type Converter Power Supply Stage. The switching frequencyof the transistor lies between 15 and 70 kHz depending on the load. The largest currentflowing time and with it the highest power transfer occurs with the lowest frequency and lowest mark-to-space ratio. In normal operating values this is approximately 30 kHz witha mark-to-space ratio of 3:1.

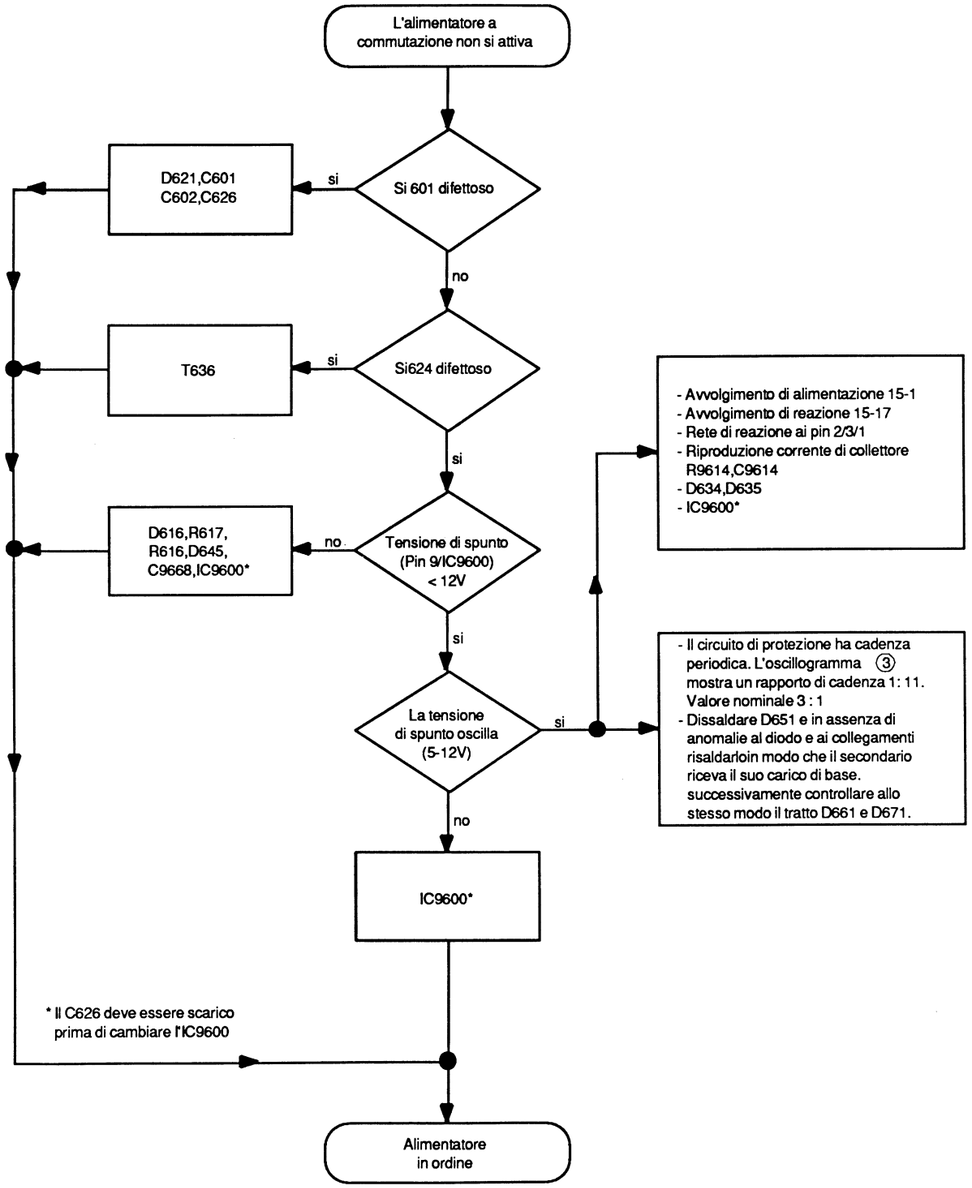
Start-up Circuit
The starting voltage of approximately 12V for the TDA 4601 is provided via the resistors R 616, PTC R 617 and the diode D 616 to pin 9. After the B.O.-type converter has started up a stabilized voltage is obtained from the winding 15-1 during the switched off phase of the transistor T 636. This voltage is applied to pin 9 of
IC 9600 via the diode D 645. Should the mains voltage decrease to a level <170 V a voltage is obtained from the winding 15-17 during the start-up process and fed to pin 9 via transistor T 9667. Since this voltage is not stable transistor T 9667 and diode D 9667 are used to stabilize it.

Normal Operation
On the input pin 2 of TDA 4601 the zero transitions of the frequencies fed in from the feedback winding are registered and passed on to an internal control logic. The rectified amplitude changes of the feedback winding (15-17) are fed to pin 3, a control input, via the adjustablepreset R 647.
The Switched Mode Power Supply Circuit produces the following operating modes:

a)Normal operation.
In this mode, all supply voltages are produced.

b)Standby operaton.
T 681 switches off T 684 so that the +B' supply is not present. Also the line driver IC 551is switched off on pin 8 via T 501, T 502. The horizontal deflection transistor T 514 is switched off as there is no base drive. Therefore, no horizontal deflection and no EHT develops.

(I) Suggerinenti per la ricerca guasti - Lato del primario collegato a potenziale di rete
- Far funzionare l'apparecchio con un transformatore separatore di rete!


L'alimentatore a commutazione non si attiva
Si 601 difettoso
si
D621,C601 C602,C626
no
Si624 difettoso
si
T636
si
Tensione di spunto (Pin 9/IC9600) < 12V
no
D616,R617, R616,D645, C9668,IC9600*
si
La tensione di spunto oscilla (5-12V)
si
- Avvolgimento di alimentazione 15-1
- Avvolgimento di reazione 15-17
- Rete di reazione ai pin 2/3/1
- Riproduzione corrente di collettore R9614,C9614
- D634,D635
- IC9600*
- Il circuito di protezione ha cadenza periodica. L'oscillogramma ③ mostra un rapporto di cadenza 1: 11. Valore nominale 3 : 1
- Dissaldare D651 e in assenza di anomalie al diodo e ai collegamenti risaldarloin modo che il secondario riceva il suo carico di base. successivamente controllare allo stesso modo il tratto D661 e D671.
no
IC9600*
* Il C626 deve essere scarico prima di cambiare l'IC9600
Alimentatore in ordine

Descrizione circuitale

Dalla tensione di rete viene ricavata una tensione continua positiva di ca. +300V mediante il raddrizzatore a ponte D 621. Per mezzo dell'avvolgimento primario del trasformatore di rete TR 651 (collegamenti 13 e 11) queste tensione continua viene applicata al transistor di commutazione T 636. Il circuito integrato IC 9600 (TDA 4601) provvede al pilotaggio, alla regolazione ed al controllo des transistor T 636.La base del transistor T 636 vienne comandata da una tensione rettangolare di ca. 2,5V che arriva attraverso C 9641 e L 9646 dal pin 7 dell'integrato IC 9600.

Nella fase di interdizione del transistor T 636 diminuisce il flusso magnetico nel trasformatore; negli avvolgimenti secondari vengono indotte correnti che attraverso i diodi ora conduttivi alimentano il carico. Poiché soltanto durante la fase di interdizione del transistor T 636 viene trasmessa energia nel carico, questo concetto viene denominato " alimentatore con convertitore ad interdizione". La frequenza di commutazione del transistor é compresa a secondo del carico tra 15 e 70 kHz. La maggiore corrente e quindi il massimo trasferimento di potenza si ottengono a bassa frequenza e con basso rapporto di cadenza. I valori normali di funzionamento si aggirano attorno ai 30 kHz con un rapporto di cadenza di 3 : 1.

Circuito di spunto:
Attraverso R 616 il, PTC R 617 ed il diodo D 616, il TDA 4601 riceve pin 9 una tensione di spunto di ca. 12V. Dopo l'innesco trasduttore, durante la fase di interdizione del transistor T 636, dall'avvolgimento 15-1, viene ricavata una tensione stabile che, attraverso il diodo D 645 giunge al pin 9 dell'integrato IC 9600.Se la tensione di rete dovesse scendere sotto i 170V, nella fase dell'avviamento viene generata una tensione dall'avvolgimento 15-17 ed inviata al pin 9 mediante il transistor T 9667. Poiché questa tensione non é stabile, essa viene resa tale dal transistor T9667 e dal diodo D 9667.

Regime normale:
All'ingresso, pin 2 del TDA 4601, vengono registrati i passaggi per lo zero delle funzioni a diversa frequenza accumulate nella bobina di reazione e trasferiti ad una logica di comando interna. Al pin 3, ingresso di regolazione, vengono applicate le variazioni d'ampiezza della bobina di reazione (15-17) raddizzate attraverso il regolatore R 647.
L'alimentatore a commutazione consente i seguenti regimi:

a) normale
Tutte le tensioni di alimentazione sone disponibili.

b) stand-by (attesa)
T 681 blocco T 684 per cui manca la tensione +B'. Inoltre lo stadio pilota IC 551 (pilotaggio della sezione di riga) viene bloccato al pin 8 attraverso T 501 e T 502. T 514 (transistor di deflessione di riga) non viene pilotato alla base e si blocca. Per questo motivo manca l'alta frequenza e la deflrssione di riga.

Ersatzteilliste (Auszug)

CUC 3490

Pos. No.	Bestell-Nr./Part No. Réf./Nr. d'ordinazioni	
1	29504-101.01	
2	29504-162.65	
5	29504-165.01	
7	29504-108.92	
8	29305-007.01	
10	29624-415.01	
12	29303-506.18	
13	29503-925.41	
14	29304-013.17	
15	29304-070.57	
15	29304-070.55	
15.1	29303-751.97	
17	29700-328.01	
18	29703-291.02	
19	29303-452.01	
20	09621-113.02	4x
21	29303-153.12	3x
22	29303-153.01	
23	29303-153.02	
24	29303-156.03	
25	29303-393.01	
26	29303-119.03	
27	29500-503.05	
28	29700-324.01	
29	29700-282.01	
K536	8324-801-071	
K536	8324-801-055	
	72008-090.02	

CUC 3490

Pos. No.	Bestell-Nr./Part No. Réf./Nr. d'ordinazioni		Benennung	Description	Denominazione
			Steckkarten	Plug-in circuit boards	Schede
1	29504-101.01		Kabeltuner	Cable tuner	Tuner per TV cavo
2	29504-162.65		ZF-Verstärker	IF-amplifier	FI-amplificatore
5	29504-165.01		Farb/RGB (Multi)	Colour RGB (Multi)	Colore RGB (Multi)
7	29504-108.92		Videotext	Videotext	Televideo
8	29305-007.01		Netzbaustein	Mains module	Modulo interr.
			Bedienungseinheit	Keyboard unit	Unita comandi
			(29501-061.02)	(29501-061.02)	(29501-061.02)
			(kein E-Teil)	(no spare part)	(nessun pezzo di ricambio)
10	29624-415.01		Frontplatte m. Tasten	Front panel w. buttons	Piastra frontale con tasti
12	29303-506.18		Snap-Folie	Elastic foil	Foglia elastica
13	29503-925.41		Keyboardplatte	Keyboard P.C B.	Piastra tastiera
14	29304-013.17		LED-Platte kpl.	LED-Plate cpl.	Piastra LED cpl.
			Mechanische Teile	Mechanical parts	Parti meccaniche
15	29304-070.57		Bildrohrplatte kpl.	Picture tube plate cpl.	Piastra cinescopio cpl.
15	29304-070.55		Bildrohrplatte kpl.	Picture tube plate cpl.	Piastra cinescopio cpl.
15.1	29303-751.97		Bildrohrfassung	Picture tube socket	Zoccolo cinescopio
17	29700-328.01		Bausteinhalter	Module holder	Supporto modulo
18	29703-291.02		Netzschalter	Mains switch	Interruttore di rete
19	29303-452.01		Netzsteckerplatte	Mains plug plate	Interr. di spina piastra
20	09621-113.02	4x	Sicherungshalter	Fuse holder	Portafusibile
21	29303-153.12	3x	Montageclip f. IC	Mounting clip for IC	Clip di montaggio p. IC
22	29303-153.01		Montageclip f. IC	Mounting clip for IC	Clip di montaggio p. IC
23	29303-153.02		Montageclip f. Trans.	Mounting clip f. Trans.	Clip di montaggio p. Trans.
24	29303-156.03		Isolierscheibe	Insulating washer	Rondella isolante
			für BU 508	for BU 508	p. BU 508
25	29303-393.01		Kopfhörerbuchse	EAR phone socket	Presa cuffia
26	29303-119.03		Euro-AV-Buchse	Euro-AV-socket	Presa Euro/Scart
27	29500-503.05		Abdeckung (AV)	Cover (AV)	Copertura (AV)
28	29700-324.01		Kabelhalter	Cable clamp	Supporto cavo
29	29700-282.01		Kabelhalter	Cable clamp	Supporto cavo
			Elektrische Teile	Electrical parts	Parti elettriche
K536	8324-801-071		Kaskade	Kascade	Moltiplic. in cascate
			B92945-S7154-M 603	B 92945-S7154-M603	B 92945-S 7154-M 603
K536	8324-801-055		Kaskade	Kascade	Moltiplic. in cascate
			B 92945-S 8154-M 573	B 92945-S 8154-M 573	B 92945-S 8154-M 573
	72008-090.02		Fokusregler		

Pos. No.	Fig. No.	Bestell-Nr./Part No. Réf./Nr. d'ordinazioni	Benennung Description Désignation Denominazione
TR		29201-018.07	
TR		29500-624.97	
F 808		8602-331-085	4,0 MG
L 336		8140-526-451	
L 337		8140-526-451	
L 511		09246-850.21	
L 518		8140-525-911	
L 533		09240-110.21	
L 601		29500-811.97	
L 672		8140-526-340	
L 673		8140-525-950	
L 676		8140-525-974	
L 806		8140-526-327	
L 1213		07202-370.97	
IC 365		8305-302-241	TDA 1905
IC 411		8305-338-170	TDA 8170
IC 501		8305-338-140	TDA 8140
IC 811		8305-684-285	ZC 84285 P
IC 820		8305-205-910	MC 144111 (MOS)
IC 881		8305-202-242	UAA 2022
IC 1211		8305-334-052	TDA 4052
T 111		8303-205-548	BC 548 B
T 501		8303-201-548	BC 548
T 502		8303-201-548	BC 548
T 681		8303-205-548	BC 548 B
T 682		8303-201-548	BC 548
T 686		8303-201-548	BC 548
T 736		8303-401-421	BF 421
T 741		8303-401-422	BF 422
T 756		8303-401-421	BF 421
T 761		8303-401-422	BF 422
T 776		8303-401-421	BF 421
T 781		8303-401-422	BF 422
T 801		8303-206-548	BC 548 C
T 806		8303-200-548	BC 548
T 1204		8303-204-549	BC 549 B
D 333		8309-201-103	BA 157
D 354		8309-214-018	TD 190
D 411		8309-210-138	1N 4936
D 421		8309-210-401	1N 4934
D 422		8309-214-007	TD 041
D 502		8309-215-020	1N 4004
D 503		8309-201-103	BA 157
D 528		8309-204-268	BYV 16 TFK
D 551		8309-214-007	TD 041
D 553		8309-214-007	TD 041
D 616		8309-215-127	1N 4007
D 621		8308-560-520	B 380/C3700/2200 FAG
D 627		8309-517-077	BYW 76 COD
D 645		8309-517-033	BYW 32 TFK
D 651		8309-517-077	BYW 76 COD
D 661		8309-517-073	BYW 72 COD
D 671		8309-517-074	BYW 72
D 707		8309-707-012	ZPD 4,7
D 711		8309-201-005	BA 157
D 734		8309-215-045	1N 4148
D 754		8309-215-045	1N 4148
D 774		8309-215-045	1N 4148
D 781		8309-215-045	1N 4148
D 804		8309-214-010	TD 129
D 850		8309-214-010	TD 129
D 873		8309-214-010	TD 129
D 883		8309-214-010	TD 129
D 1201		8309-211-705	SFH 205 G
C 366		8415-166-147	1000 uF/25 V
C 411		8452-996-150	2200 uF/25 V
C 433		8452-996-107	2200 uF/16 V
C 433		8452-166-107	1000 uF/16 V
C 462		8563-731-424	0,33 uF/160 V
C 516		8525-040-830	0,6 uF/250 V (!)

Pos. No.	Fig. No.	Bestell-Nr./Part No. Réf./Nr. d'ordinazioni	Benennung Description Désignation Denominazione
TR		29201-018.07	
TR		29500-624.97	
F 808		8602-331-085	4,0 MG
L 336		8140-526-451	
L 337		8140-526-451	
L 511		09246-850.21	
L 518		8140-525-911	
L 533		09240-110.21	
L 601		29500-811.97	
L 672		8140-526-340	
L 673		8140-525-950	
L 676		8140-525-974	
L 806		8140-526-327	
L 1213		07202-370.97	
IC 365		8305-302-241	TDA 1905
IC 411		8305-338-170	TDA 8170
IC 501		8305-338-140	TDA 8140
IC 811		8305-684-285	ZC 84285 P
IC 820		8305-205-910	MC 144111 (MOS)
IC 881		8305-202-242	UAA 2022
IC 1211		8305-334-052	TDA 4052
T 111		8303-205-548	BC 548 B
T 501		8303-201-548	BC 548
T 502		8303-201-548	BC 548
T 681		8303-205-548	BC 548 B
T 682		8303-201-548	BC 548
T 686		8303-201-548	BC 548
T 736		8303-401-421	BF 421
T 741		8303-401-422	BF 422
T 756		8303-401-421	BF 421

Pos. No.	Fig. No.	Bestell-Nr./Part No. Réf./Nr. d'ordinazioni	Benennung Description Désignation Denominazione
T 761		8303-401-422	BF 422
T 776		8303-401-421	BF 421
T 781		8303-401-422	BF 422
T 801		8303-206-548	BC 548 C
T 806		8303-200-548	BC 548
T 1204		8303-204-549	BC 549 B
D 333		8309-201-103	BA 157
D 354		8309-214-018	TD 190
D 411		8309-210-138	1N 4936
D 421		8309-210-401	1N 4934
D 422		8309-214-007	TD 041
D 502		8309-215-020	1N 4004
D 503		8309-201-103	BA 157
D 528		8309-204-268	BYV 16 TFK
D 551		8309-214-007	TD 041
D 553		8309-214-007	TD 041
D 616		8309-215-127	1N 4007
D 621		8308-560-520	B 380/C3700/2200 FAG
D 627		8309-517-077	BYW 76 COD
D 645		8309-517-033	BYW 32 TFK
D 651		8309-517-077	BYW 76 COD
D 661		8309-517-073	BYW 72 COD
D 671		8309-517-074	BYW 72
D 707		8309-707-012	ZPD 4,7
D 711		8309-201-005	BA 157
D 734		8309-215-045	1N 4148
D 754		8309-215-045	1N 4148
D 774		8309-215-045	1N 4148
D 781		8309-215-045	1N 4148
D 804		8309-214-010	TD 129
D 850		8309-214-010	TD 129
D 873		8309-214-010	TD 129
D 883		8309-214-010	TD 129
D 1201		8309-211-705	SFH 205 G
C 366		8415-166-147	1000 uF/25 V
C 411		8452-996-150	2200 uF/25 V
C 433		8452-996-107	2200 uF/16 V
C 433		8452-166-107	1000 uF/16 V
C 462		8563-731-424	0,33 uF/160 V
C 516		8525-040-830	0,6 uF/250 V (!)

Pos. No.	Fig. No.	Bestell-Nr./Part No. Réf./Nr. d'ordinazioni	Benennung Description Désignation Denominazione
C 517		8525-040-830	0,6 uF/250 V (!)
C 518		8515-911-002	560 pF/1600 V (!)
C 519		8523-631-218	1800 pF/400 V
C 521		8515-722-221	0,21 uF/160 V
C 521		8515-722-241	0,31 uF/160 V
C 522		8515-722-221	0,21 uF/160 V
C 522		8515-722-241	0,31 uF/160 V
C 523		8515-911-064	5400 pF/1600 V
C 525		8563-731-622	0,022uF/1000 V (!)
C 526		8563-731-622	0,022uF/1000 V (!)
C 527		8660-097-219	220pF/20% (!)
C 528		8650-090-477	270pF/2 KV
C 536		8531-510-343	0,68uF/160 V
C 601		8599-990-025	0,15uF/250 V (!)
C 602		8599-990-025	0,15uF/250 V (!)
C 609		8563-732-425	0,1uF/250 V (!)
C 611		8660-097-238	2200 pF
C 613		8660-097-238	2200pF
C 621		8650-090-510	1000pF/1 KV
C 622		8650-090-510	1000pF/1 KV
C 623		8650-090-510	1000pF/1 KV
C 624		8650-090-510	1000pF/1 KV
C 626		8443-306-050	150uF/385 V
C 637		8515-911-091	2200pF/2000 V (!)
C 651		8650-090-477	270pF/2 KV
C 661		8650-090-477	270pF/2 KV
C 671		8650-090-477	270pF/2 KV

MOS = Vorschriften beachten
Observe MOS precautions
Rispettare le norme MOS

Pos. No.	Fig. No.	Bestell-Nr./Part No. Réf./Nr. d'ordinazioni	Benennung Description Désignation Denominazione
R 333		8700-007-425	10 Ohm (!)
R 337		8705-269-299	12 kOhm
R 341		8705-369-027	12 Ohm
R 367		8700-229-023	8,2 Ohm NB (!)
R 433		8790-047-151	10 Ohm
R 436		8790-047-109	100 Ohm
R 513		8705-329-241	47 Ohm
R 513		8705-329-039	39 Ohm
R 516		8730-018-985	0,22 Ohm
R 524		8766-397-017	4,7 Ohm (!)
R 525		8735-003-033	0,33 Ohm (!)
R 528		8705-221-225	10 Ohm (!)
R 531		8311-201-073	PTC 2 G/P 2390-J 146 (!)
R 532		8730-179-229	15 Ohm
R 533		8765-044-123	120 kOhm
R 533		8765-044-121	100 kOhm
R 609		8311-200-010	DUO-PTC (!)
R 623		8311-400-125	VDR VZA 275 (!)
R 624		8718-250-158	3,6 mOhm VDE (!)
R 627		8718-250-014	4,7 mOhm VDE (!)
R 648		8750-210-049	100 Ohm
R 661		8735-003-022	0,22 Ohm (!)
R 671		8735-003-022	0,22 Ohm (!)
R 688		8790-047-122	300 Ohm
R 738		8705-227-011	2,7 Ohm
R 801		8766-357-169	10 mOhm
R 802		8766-357-169	10 mOhm
Si 601		8315-617-006	2,5 A/T (!)
Si 624		8315-618-002	1,25 A/T (!)

Bauteilhinweis
(!) Hinweis:
Bauelemente nach VDE-bzw. IEC-Richtlinien.Im Ersatzfall
nur Teile mit gleicher Spezifikation verwenden!
Notes on components (!) Cautions
Components to VDE or IEC quidelines. Only use components
with the same specification for replacement!
(!) nota:
Componenti secondo le norme VDE risp. te iec. in caso di
sostituzione impiegaresolo componenti con le stesse caratteristiche!

Änderungen vorbehalten · Alterations reserved · Tous droits de modifications réservés · Con riserva di modifiche

TABELLE UEBER 90° BILDROEHRENTYPEN
TABLE OF 90° PICTURE TUBE TYPES
TABELLA DI TIPI DI TUBI A 90°
TABLEAU DES MODELES DE TUBES CATHOD. 90°

○ - RUNDROEHRE / CIRCULAR PICTURE TUBE / TUBO AD ANGOLI TONDI / TUBE A COINS RONDS

□ - FLAT SQUARE-ROEHRE / FLAT SQUARE TUBE / TUBO FLAT SQUARE / TUBE FLAT SQUARE

⌀	TYPE TYPE TIPO MODELE	HERSTELLER MANUFACTURER DITTA FABRICANT	BEMERKUNG REMARK OSSERVAZIONE REMARQUE	L_V MH	L_H MH	R_V Ω	R_H Ω	U_H KV	$U_{FOC.}$ KV	SACHNUMMER ORDER NO. N.D'ORDINAZ. N. DE PRODUIT
14"/37CM	A 34 JLL 70 X 23	ORION	○ CLEAR GLASS	28	2,47	14,7	3,2	23	5,8-6,5	8300-030-252
14"/37CM	A 34 JLL 90 X 23	ORION	○ TINTED GLASS	28	2,47	14,7	3,2	23	5,8-6,5	8300-020-035
14"/37CM	A 34 EAC 00 X 03	PHILIPS	○ CLEAR GLASS	27,5	2,5	13,75	3,3	23	6-6,9	8300-030-252
14"/37CM	A 34 EAC 01 X 03	PHILIPS	○ TINTED GLASS	27,5	2,5	13,75	3,3	23	6-6,9	8300-020-035
14"/37CM	370 JMB 22-TC 03	MITSUBISHI	○ CLEAR GLASS	28	2,41	14,7	3,2	23	5,3-6	8300-030-252
14"/37CM	A 34 EAC 00 X 06	PHILIPS	○ CLEAR GLASS HOEHERE EMPFINDLICHKEIT / HIGHER SENS. SENS. MAGG. SENSIBILITE SUPERIEURE	27,5	2,5	13,6	3,3	23	6,1-6,9	8300-020-036
14"/37CM	A 34 EAC 01 X 06	PHILIPS	○ TINTED GLASS HOEHERE EMPFINDLICHKEIT / HIGHER SENS. SENS. MAGG. SENSIBILITE SUPERIEURE	27,5	2,5	13,6	3,3	23	6,1-6,9	
15"/40CM	A 36 EAM 00 X 01	PHILIPS	□ CLEAR GLASS	26,2	2,43	12,2	3,2	23	6,7-7,6	8300-020-188
15"/40CM	A 36 EAM 01 X 01	PHILIPS	□ TINTED GLASS	26,2	2,43	12,2	3,2	23	6,7-7,6	8300-020-189
15"/40CM	A 36 JAR 00 X 01(M)	TOSHIBA	□ CLEAR GLASS	28	2,5	14,7	3,2	22	6,7-7,4	8300-020-188
15"/40CM	A 36 JAR 40 X 03(MW)	TOSHIBA	□ TINTED GLASS	28	2,5	14,7	3,2	22	6,7-7,4	8300-020-189
15"/40CM	A 36 JUF 60 X 06	HITACHI	□ TINTED GLASS	28	2,5	15,4	3,7	22	6,7-7,4	
16"/42CM	A 38 EAC 00 X 03	PHILIPS	○ CLEAR GLASS	27,5	2,5	11,8	3,3	23	6,1-6,9	8300-030-364
16"/42CM	A 38 EAC 01 X 03	PHILIPS	○ TINTED GLASS	27,5	2,5	11,6	3,3	23	6,1-6,9	8300-020-190
16"/42CM	420 FSB 22-TC02(PY)	TOSHIBA	○ CLEAR GLASS	28	2,41	14,7	3,1	22	5,8-6,5	8300-030-365
16"/42CM	A 38 JAN 40 X 01(W)	TOSHIBA	○ TINTED GLASS	28	2,41	14,7	3,1	22	5,6-6,5	8300-020-190
16"/42CM	420 GAB 22-TC02	HITACHI	○ CLEAR GLASS	28	2,5	14,7	3,3	23	6,1-6,8	8300-030-365
16"/42CM	420 GUB 22-TC01	MITSUBISHI	○ CLEAR GLASS	28	2,41	14,7	3,2	22	5,9-6,6	8300-030-364
17"/45CM	A 41 EAM 00 X 01	PHILIPS	□ CLEAR GLASS	26	2,43	12,2	3,2	23	6,7-7,6	8300-020-201
17"/45CM	A 41 EAM 01 X 01	PHILIPS	□ TINTED GLASS	26	2,43	12,2	3,2	23	6,7-76	8300-020-202
17"/45CM	A 41 JAR 00 X 01(M)	TOSHIBA	□ CLEAR GLASS	28	2,5	14,7	3,2	22	6,7-7,4	8300-020-201
17"/45CM	A 41 JAR 40 X 02(MW)	TOSHIBA	□ TINTED GLASS	28	2,5	14,7	3,2	22	6,7-7,4	8300-020-202
19"/50CM	A 46 JAR 00 X 01(M)	TOSHIBA	□ CLEAR GLASS	28	2,2	14,7	2,6	25	7,6-8,4	8300-020-308
19"/50CM	A 46 JAR 40 X 01(W)	TOSHIBA	□ TINTED GLASS	28	2,2	14,7	2,6	25	7,6-8,4	8300-020-312
19"/50CM	A 46 JSF 01 X 03	HITACHI	□ CLEAR GLASS	28	2,2	13,8	3	25	7,8-8,8	8300-020-308
19"/50CM	A 46 JSF 61 X 03	HITACHI	□ TINTED GLASS	28	2,2	13,8	3	25	7,8-8,8	8300-020-312
20"/51CM	A 48 EAC 00 X 01	PHILIPS	○ CLEAR GLASS	27,5	2,5	11,8	3,3	25	7,3-8,3	8300-020-310
20"/51CM	A 48 EAC 01 X 01	PHILIPS	○ TINTED GLASS	27,5	2,5	11,8	3,3	25	7,3-8,3	8300-020-311
20"/51CM	510 YXB 22-TC02(SY)	TOSHIBA	○ CLEAR GLASS	28	2,14	14,7	2,7	25	7,6-8,4	8300-030-351
20"/51CM	A 48 JAN 43 X 01(W)	TOSHIBA	○ TINTED GLASS	28	2,14	14,7	2,7	25	7,6-8,4	8300-020.311
20"/51CM	510 ABWB 22-TC02	HITACHI	○ CLEAR GLASS	28,7	2,4	13,8	3,2	25	7,7-8,5	8300-030-351
20"/51CM	A 48 JLL 90 X 01	ORION	○ TINTED GLASS	28	2,14	14,7	2,15	25	7,3-8,3	
21"/55CM	A 51 JAR 00 X 03(M)	TOSHIBA	□ CLEAR GLASS	28	2,11	14,7	2,6	25	7,6-8,4	8300-020-535
21"/55CM	A 51 JAR 43 X 01(MW)	TOSHIBA	□ TINTED GLASS	28	2,11	14,7	2,6	25	7,6-8,4	8300-020-536
21"/55CM	A 51 JSX 01 X 03	HITACHI	□ CLEAR GLASS	28	2,2	13,8	3	25	7,8-8,8	8300-020-535
21"/55CM	A 51 JSX 61 X 03	HITACHI	□ TINTED GLASS	28	2,2	13,8	3	25	7,8-8,8	8300-020-536